

# *Canadian Journal of* **PUBLIC HEALTH**

*The National Journal of Preventive Medicine*

ASSOCIATION

50th YEAR

THE JOURNAL

**Volume 50**

**JANUARY 1959**

**Number 1**

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**THE ALBERTA DEPARTMENT OF PUBLIC HEALTH**

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**DISC-PLATE ASSAY OF POLIOMYELITIS ANTIBODIES**

**Leone N. Farrell and D. B. W. Reid**

**ABSTRACTS OF 29 PAPERS PRESENTED AT  
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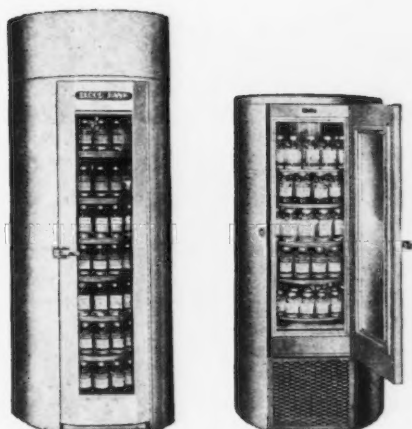
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The Canadian Journal of Public Health is published monthly by the Canadian Public Health Association. Editorial and business offices, 150 College Street, Toronto 5, Ontario. Subscription in Canada \$3.00 a year, payable in advance. Subscription rate outside Canada \$5.00 a year. Single copies 50 cents. Authorized as second-class mail, Post Office Department, Ottawa. Contents may be reproduced only with the permission of the Editorial Board.



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# Canadian Journal of PUBLIC HEALTH

VOLUME 50

TORONTO, JANUARY 1959

NUMBER 1

## Practising Effective Public Health<sup>1</sup>

WILSON G. SMILLIE,<sup>2</sup> M.D.

THE major purpose of this annual convention of the members of the Canadian Public Health Association is quite definitive. Each of you has formulated a career. You have decided to devote your fullest efforts to the protection and promotion of the health of the people of Canada, and, furthermore, have decided that you will carry out your work through the medium of organized community effort.

It is quite logical that you desire to be as effective as possible in carrying out your work. Thus, it seemed reasonable that you should ask me to open the discussion of this meeting under the title "Practising Effective Public Health".

The question at once arises: what is our concept of public health? It is difficult to define since public health is a social phenomenon and is based on social concepts. These concepts are founded on broad principles but their interpretation is constantly changing.

I shall give you my concepts. In the broad sense, *public health* encompasses the *responsibilities* of the community for the protection and promotion of the health of its people—in contrast to responsibility of the individual for promotion of his own health and that of his family.

Thus, if we are to practise public health effectively, the first requirement is an understanding of the basic elements of public health. What is the job? What are the responsibilities of the community in these matters?

Our answer requires a historical perspective, for the concept of public health today is quite different from that of a generation ago. Furthermore, these concepts will continue to change. Thus, if we practise public health effectively, we must understand the direction that these changes will take in

<sup>1</sup>Presented at the forty-sixth annual meeting of the Canadian Public Health Association, May 21, 1958, Vancouver, B.C.

<sup>2</sup>Professor Emeritus, Public Health and Preventive Medicine, Cornell Medical College, Cornell University, Ithaca, New York.

order to interpret the trends and to plan the direction of our future programs to meet future needs.

What are our present concepts of public health? How did these develop? There are certain accepted, undisputed elements of public health that are so familiar to you that they require brief consideration only. We may consider these the foundation stones of the public health program.

#### CONTROL OF THE PHYSICAL ENVIRONMENT

Communal life produces individual and family health hazards. We have learned to control these man-made hazards quite effectively. Thus, the principles of environmental sanitation are well understood. The great difficulty is that new hazards are developing constantly. Notable are changes in chemical and radiological components of the environment. The increasing hazards of traumatic accident, the necessity for better housing and recreation—in fact, the whole field of community planning requires new public health techniques.

The challenge to the sanitarian, the industrial engineer, the biochemist, the public health administrator, and other public health staff in meeting these problems is a stimulating one. To be more effective, we must work in conjunction with other official and unofficial agencies of the community to a greater degree than ever before. The principles of environmental sanitation remain unchanged, but the field has broadened and become more complex, requiring broader training and greater skills.

We have developed some degree of mastery over the biological elements of man's environment. Our success in control of communicable diseases has truly been phenomenal. Techniques will improve, but we do understand the basic principles and patterns. The obvious way to practise better public health in these fields is pursuit of new knowledge and application of this knowledge under known principles.

Health education is universally accepted as a basic function of public health. We have not been too effective perhaps, in our techniques, but the responsibility is an obvious one, and methodology is improving constantly. Practising more effective public health in this field requires a broader and deeper training of technicians. In the past, the health educator has not had the respect and esteem of his public health colleagues because of the superficiality of his knowledge of basic scientific principles of the field. This situation is changing.

All these essentials relate to *health protection* of the community. Until recently they were public health in its entirety.

#### PROMOTION OF INDIVIDUAL HEALTH

A new public health concept began its development at the beginning of this century. It was, in essence, the idea that the community had a direct responsibility for health of the individual. It was initiated as a maternal and infant health service. Health promotion of the school child was developed concurrently. Child health clinics and maternity clinics were established by health departments. Public health nursing was a direct outgrowth of this concept.

But these activities were developed essentially as welfare services in that they were—and in great part still are—services which are limited to the poor. All clinic services—child health, prenatal service, dental clinic—all the various activities of the health centers that were organized in so many health departments, were planned for the poor, and not for the community at large. This concept assumes that there is a constant, permanent, more or less homogeneous, section of the population which may be termed the poor—malnourished, badly housed, underprivileged. This concept is deeply embedded in our social structure, but is, of course, a false one.

Gradually, however, the idea grew that *every* well individual in the community is a community asset. In contrast, a chronically ill person, or a cripple who was injured in an industrial accident, became a community liability. Dublin wrote a book called "The Money Value of a Man" which calculated the cost to the family and the community of rearing the average child to adulthood. He also calculated the potential value of that person to the community as the man stood on the threshold of his career. He showed that the individual—any individual—is a costly and valuable product.

Thus there developed the concept that conservation of individual health, not only of the poor, but of every citizen, was a community responsibility—that is to say, a public health function.

Industrial health service was the next logical development. Accident prevention in all its ramifications came within the public health purview.

Mental health began to receive consideration. But there was, and is, great confusion in this field because of lack of knowledge. There was, and still is, no clear understanding of the basic causes of mental disease. For the most part, no differential diagnostic techniques are available which will distinguish between true pathology and simple emotional conflict in a potentially well individual. The community responsibility that has been assumed in mental illness is "custodial care of the insane" which is designed primarily as a community protection against dangerous people. Even today, in our large mental hospitals, only a very small fraction of the patients are under active therapy. Practice of more effective public health in the field of mental hygiene requires primarily an intense study of the unknown basic factors which cause mental disease.

#### CHANGING CONCEPTS IN PUBLIC HEALTH MEDICINE

The next obvious step was assumption by the community of an increasing responsibility, namely the prevention of chronic diseases and the rehabilitation of those who had developed disabling illness. This problem came into acute focus largely because of the aging of our population. Heart disease, arthritis, cancer, diabetes, hypertension, glaucoma, began to loom large as a community responsibility because they represented a destruction of community assets.

We are now floundering in this broad field of effort. How shall we be most effective? By early detection? What then? What shall we do about those patients who are detected? Shall we aid in determination of basic causes? If prevention is not feasible, then amelioration may be instituted, for example, work classification clinics for persons with arthritis, for heart disease and



hypertension. Are they worthwhile? Who will establish and conduct them? Is this a public health function?

The next and fairly obvious development was proposed by the sociologists rather than by public health personnel or the medical profession. It was suggested that the community should assume responsibility for development and support of all necessary facilities for protection and promotion of health. This proposal suggested:

- (1) A plan that would assure adequate medical care for all.
- (2) Provision by the community of facilities for comprehensive preventive and curative medical services for all the citizens.

This proposal has been discussed extensively with wide variations in opinion. To date, we have chosen to develop adequate medical care, including most preventive services, not as tax-supported facilities, but under individual initiative, with supplementary community (e.g. local, provincial and national) aid.

Experience shows that most preventive services require community aid. But the care of acute illness, including hospitalization, is provided almost entirely on an individual initiative basis. Care of chronic illness, on the other hand, with rehabilitation, has become, for the most part, almost a full community responsibility.

We are not at all sure just what the future has in store. We do not know what the community will assume, or perhaps demand, as its future responsibilities in health protection and promotion. But, we do know where we are now, and can assess our job quite accurately. It is obviously a most complex administrative problem, requiring skill, foresight, diplomacy, patience, and a historical perspective. Clearly, the job requires talents of a high order. So much for the job itself.

#### TRAINING IN PUBLIC HEALTH

We now realize as never before, that one cannot practise public health effectively without adequate theoretical training and supervised field experience. Furthermore, we realize that certain of the tasks are highly specialized and require special training; in sanitary engineering, industrial hygiene, public health nursing, health education, mental hygiene, administration of hospitals and nursing home facilities, rehabilitation centers, as well as occupational medicine, and many other public health facets.

These newer concepts of the scope of public health have required changes in the curriculum in our schools of public health. The trend is for a longer period of training. One academic year is devoted to the study of basic public health principles, a supplementary additional training of a year or more is required for special fields.

Thus, to practise public health effectively, we must be adequately trained for its responsibilities.

#### KNOW THE COMMUNITY

One further step is required in order to practise public health effectively. The public health worker must know the broad scope of the task and understand its intricacies. He must have adequate training to do the job.

But he must also know intimately the community in which he works. We forget that every community is different from every other. Each has its own peculiar structure, its historical development, its local mores, its special problems, its stage of social consciousness. In order to practise public health effectively, the health administrator must become an intimate and integral part of the community. He must study it carefully and in great detail, so that he may be able to meet the health needs of his people in a manner that will be acceptable to them and also to satisfy his own feeling of a task well done.

#### SUMMARY

Public health may be practised effectively if the following precepts are followed:

- Develop the concept of public health, not as fixed, inevitable laws, but as a gradually advancing social philosophy.
- Know thoroughly the scope of the job as it presents itself, and make an accurate appraisal as to what the future has in store.
- Learn by precept, training, and supervised experience just how to do the job well.
- Know your individual community well, through thoughtful and continuous study, in order to understand its personal needs, and, to plan for their provision.

This job cannot be done by the administrator who works within the confines of his own organization and his adopted budget. He must work in conjunction with the other official agencies, and even more important, he must work with and through all the volunteer health and welfare agencies of the area.

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# The Alberta Department of Public Health<sup>1</sup>

A. SOMERVILLE,<sup>2</sup> M.D., D.P.H. and R. D. DEFRIES,<sup>3</sup> M.D., D.P.H.

## ALBERTA AS A PROVINCE

ALBERTA is the most westerly of the prairie provinces, extending from the eastern slopes of the Rocky Mountain foothills to the neighbouring province of Saskatchewan on the east. It varies in width from 180 miles at the International boundary to about 400 miles at its widest part which is slightly north of Edmonton. Its length from north to south is 760 miles and its area is 255,285 square miles. On the north it is bounded by the Northwest Territories and its southeastern portion is a rolling treeless prairie which is thinly populated because it is subject to dry periods. Its parkland area which is well adapted to agriculture is triangular in shape and may be enclosed on the map by a line drawn from the point where the Rocky Mountains cross the American boundary to one some 400 miles north, thence eastward to the Saskatchewan boundary, then southwestward to the point of commencement. To the north of this lies half of the province consisting of lakes, forest, muskeg and occasional areas of good farming land.

Alberta's principal farm crop is wheat which is grown successfully from the United States border to the Peace River Valley in the far northwestern part of the province. The agricultural area is estimated at approximately 100,000,000 acres. Alberta possesses more coal than all other provinces of Canada combined and also produces more oil and natural gas. Nearly 53 per cent of the land is forested, the area being estimated at more than 130,000 square miles. Much of the province is fur-producing wild life country.

Edmonton, the capital, is situated on both sides of the North Saskatchewan River close to the geographical center of the province. It is the seat of the legislature and of the provincially owned University of Alberta. Calgary is the other chief industrial and commercial center, 200 miles south of Edmonton, at the junction of the Bow and Elbow Rivers. Lethbridge, population 31,120, lies in the deep valley of the Old Man River not far from the southern boundary of the province. Drumheller is a coal mining city located on the Red Deer River, 100 miles northeast of Calgary. The population of Alberta has been growing steadily since the beginning of the century. In 1901 the population was 13,022; in 1921, 588,454 and in 1957, 1,160,000. In the past ten years Alberta has been shifting rapidly from a predominantly agricultural province to one mainly engaged in mining and manufacturing.

The general death rate for 1957 was 7.1 per thousand population (Canada 8.2); the birth rate 30.8 (Canada 28.3); the marriage rate 8.7 (Canada 8.0).

<sup>1</sup>One of a series presenting the development and organization of public health in each of the provinces and the Department of National Health and Welfare of Canada.

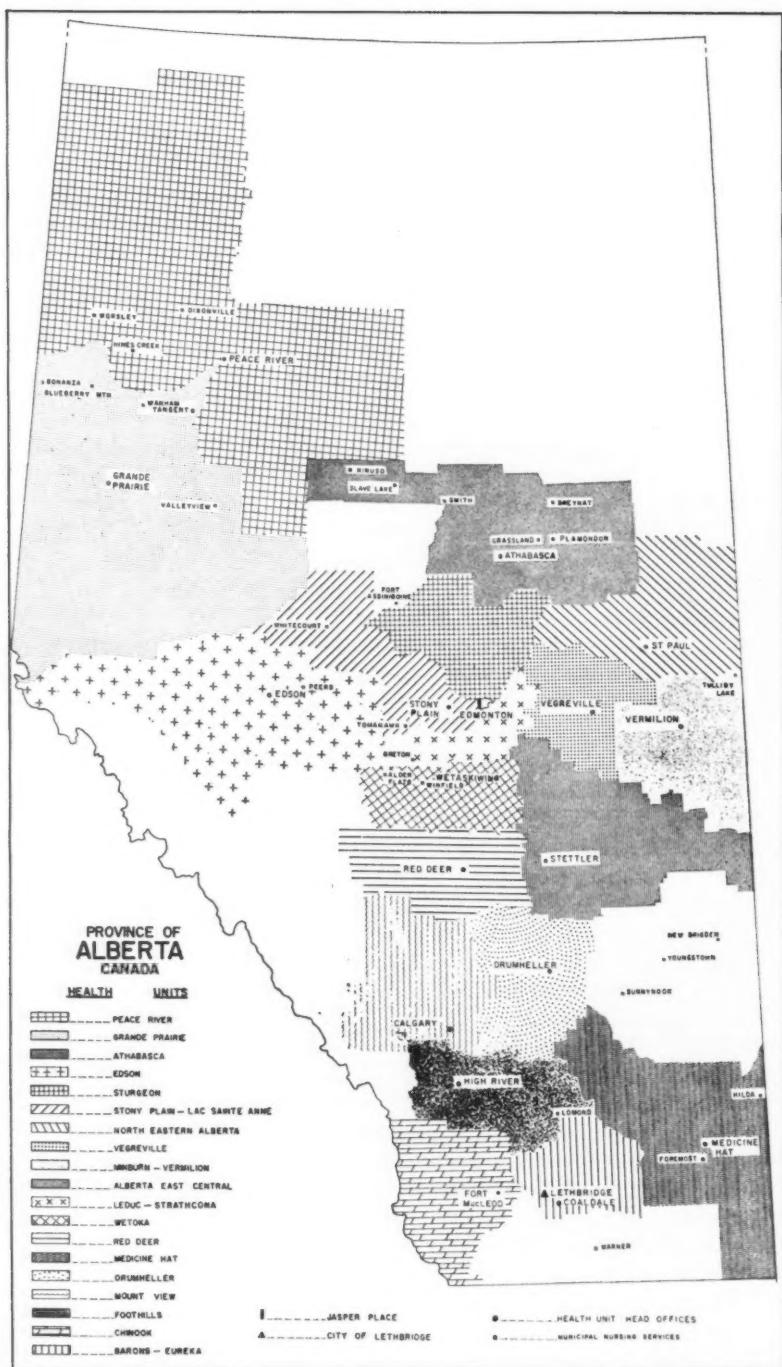
<sup>2</sup>Deputy Minister of Health of Alberta.

<sup>3</sup>Director Emeritus and Consultant, Connaught Medical Research Laboratories.

The infant mortality rate was 27.0 per thousand live births (Canada 31.0), and the maternal mortality rate was 0.3 per thousand live births (Canada 0.5).

### HISTORICAL HIGHLIGHTS

- 1905—Alberta was created a province. Previously, public health services in the Northwest Territories (districts of Assiniboia, Saskatchewan and Alberta) had been administered in the Department of Agriculture under a public health ordinance with Dr. M. M. Seymour as medical officer of health and Dr. G. A. Charlton as bacteriologist.
- 1906—Dr. A. E. Clendennan was the first provincial medical officer of health.
- 1907—Provincial Laboratory was established as a division with Dr. D. G. Revell as provincial bacteriologist.
- Dr. L. E. W. Irving succeeded Dr. Clendennan as provincial medical officer of health.
- The first public health act of Alberta provided for a provincial board of health of five members, the division of the province into health districts and local boards of health under the provincial board.
- The first board was composed of Dr. J. D. Lafferty, Calgary, Chairman; Dr. F. G. Mewburn, Lethbridge; Dr. C. N. Cobbett, Edmonton; Dr. L. E. W. Irving, provincial medical officer of health and Mr. R. B. Owens, provincial sanitary engineer.
- 1910—A new public health act extended the authority of the provincial board and reduced its membership to three—the provincial medical officer of health (chairman), the provincial sanitary engineer and the provincial bacteriologist.
- 1911—Bacteriological laboratory was transferred to the University of Alberta.
- 1912—Dr. W. C. Laidlaw was appointed provincial medical officer of health succeeding Dr. L. E. W. Irving.
- 1914—Dr. A. C. Rankin, dean of the faculty of medicine, University of Alberta, was appointed professor of bacteriology and director of the provincial Laboratory. Later in the year Dr. Rankin proceeded overseas (World War I) and Dr. Heber C. Jamieson temporarily served as director.
- Dr. W. C. Laidlaw also proceeded overseas and Dr. G. J. Norman was appointed provincial medical officer during his absence.
- 1917—The inauguration of the Municipal Hospitalization Plan made local hospital service generally available by assisting municipalities to establish hospitals and to operate through the payment of hospital taxes by ratepayers and supporters. Standard ward care was provided at \$1.00 per day. Alberta was the second province to adopt this plan.
- 1918—The administration of public health was transferred from the Department of Agriculture to the Department of the Provincial Secretary under the Hon. George T. Smith and, shortly, was transferred to the Department of Municipal Affairs under the Hon. A. G. Mackay.
- A division of public health nursing was established.
- The first provincial sanitary inspectors were appointed.
- The first venereal disease prevention act was passed and the Division of Social Hygiene was established in 1920 under Dr. Harold Orr.



- 1919—By the passing of the Department of Public Health Act the Province of Alberta became the second province to establish a Department of Health. Dr. W. C. Laidlaw became the deputy minister on his return from overseas service.
- 1920—A tuberculosis sanatorium was opened at Robertson under the joint auspices of the Department of Soldiers Civil Re-establishment, Ottawa and the Province of Alberta. This institution replaced the sanatorium at Frank which the S.C.R. had established a few years before. In 1925, it was transferred to the Department of Public Health and named Baker Memorial Sanatorium in memory of Dr. A. H. Baker, the first director.
- 1921—The Hon. D. R. Mitchell was succeeded by the Hon. A. G. Mackay as minister of health and in the following year by the Hon. R. G. Reid.
- 1923—Hon. George Hoadley was appointed minister of health and served until 1935. Department of Health became responsible for the care of the mentally ill and for the program of mental hygiene.
- 1925—The first tuberculosis clinic was held in Drumheller and in 1928 clinics were opened in Edmonton and Calgary.
- 1926—Death of Dr. W. C. Laidlaw, deputy minister, under whose direction the foundations of the department had been so well laid.
- 1927—Dr. Malcolm R. Bow was appointed deputy minister of health serving until his retirement in 1953. During his administration, the work of the Department was greatly expanded and new divisions organized.
- 1928—Special poliomyelitis hospital for the treatment of crippling.  
Division of Health Education established.  
Sexual Sterilization Act was passed, the first in Canada.
- 1929—An advisory committee on health was appointed by the minister with representatives from the medical profession, public health, city medical officers, hospitals, urban and rural representatives. Authority granted for the establishing of full-time health units.
- 1931—Full-time health units were opened at High River and Red Deer.
- 1935—Dr. W. W. Cross was appointed Minister of Health.
- 1936—Treatment of tuberculosis provided without charge to patients.
- 1938—At Lamont, the third health unit was established.  
Poliomyelitis Sufferers Act gave free hospital, medical, surgical care.
- 1940—Cancer Treatment and Prevention Act.
- 1944—The Maternity Hospital Act provided hospital care without charge to patient and grant for home care.  
Division of Entomology established following studies in 1937 on sylvatic plague and Rocky Mountain Spotted Fever.  
Seven additional health units were opened making 16 in all.
- 1947—Blood Transfusion Service established in co-operation with Canadian Red Cross Society.
- 1949—Free care for rheumatoid arthritis patients under 25 years of age.
- 1950—Nursing Services Act, expanded district nursing services to assist villages and rural municipalities to appoint public health nurses.  
Branch Provincial Laboratories opened at Calgary.
- 1951—Health Unit Act facilitated the opening of new units.



- 1952—Poliomyelitis epidemic, 774 cases and 81 deaths.  
Dr. A. Somerville appointed Deputy Minister of Health.  
Aberhart Memorial Sanatorium opened in Edmonton.  
Cerebral palsy clinics opened in Edmonton ('50) and Calgary ('52).  
1953—Poliomyelitis outbreak—1,399 cases and 109 deaths.  
1957—The Hon. J. D. Ross, Minister of Health succeeded Dr. W. W. Cross who retired after serving 22 years.  
1958—Provincial Hospital Insurance provided.

### PUBLIC HEALTH ORGANIZATION AND SERVICES

From the time the province was established local public health has been regarded as a local responsibility. More recently, in recognition of enlarged responsibilities in this field, the province has come more into the picture with grants-in-aid, but leaving the operating responsibility in local hands. Every municipality outside a rural health unit is required to appoint a board of health. Cities and towns are also required to appoint a health officer. In 1929, legislation permitted the establishing of full-time health units which now cover the province. Hospital services are similarly decentralized through local units.

Originally, health services were administered by a provincial board of health. Alberta, in 1919, was the second province in Canada to establish a department of health under a minister of health. The Provincial Board of Health however, continued to supervise local boards of health, conduct investigations in outbreaks of disease and serve as an advisory body to the minister. The Board consists of the provincial medical officer of health (deputy minister), provincial sanitary engineer and the provincial bacteriologist. The Deputy Minister is the executive head of the department, chairman of the Provincial Board of Health and Registrar General of Vital Statistics.

Local health services are provided through 21 full-time local health units and 2 city departments of health serving more than 92% of the population.

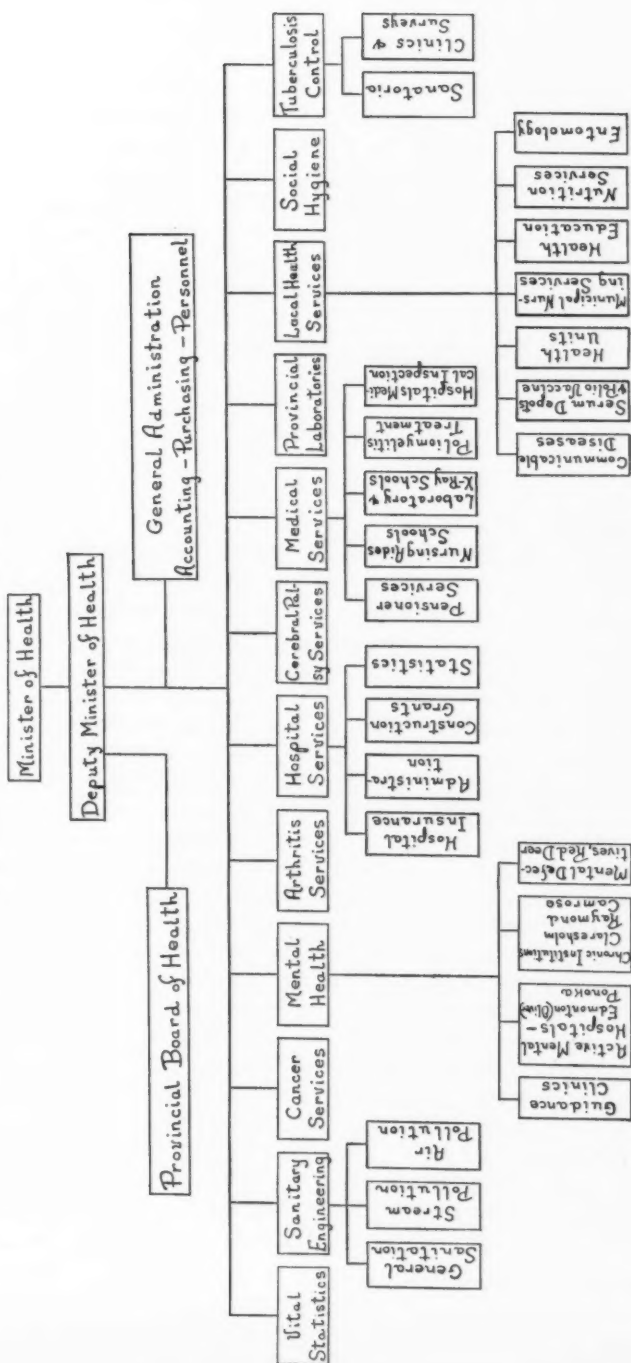
Certain areas where the population is sparse and which are situated at considerable distance from medical and hospital services are supplied with a "municipal nurse". One nurse is placed in a district serving about 1,200 people and she supplies emergency treatment and a general public health nursing service to her community. Each location has a telephone or a two-way radio communicating with the Alberta Forestry Service. In this way, the nurse is able to obtain medical advice when needed. In some cases, these nursing areas overlap with a health unit, in which case the municipal nurse comes under the supervision of the medical officer of the health unit. In 1958, there were 30 municipal nursing stations located as shown on the map.

By special legislation, the province gives support to the health services of the two largest cities, Edmonton and Calgary, but this support is less than the support given to public health services in the remainder of the province.

The public health services of the local authorities receive additional support from the province in other ways. All biologicals, both for prevention and treatment of communicable disease, are supplied to local health departments without charge. Since July 1, 1958 the province has supplied penicillin tablets for the continued prophylaxis of rheumatic fever. The services of the Director



# Department of Public Health—Alberta DIVISIONAL ORGANIZATION CHART



of Health Units and his staff are available to the boards of the health units or to the staffs of the health units in an advisory capacity. The services of the Division of Sanitary Engineering are also available to the health units.

The estimates for the Department of Public Health in the fiscal year 1957-58 totalled \$27,333,000 while for 1958-59 the figure reached \$38,803,000. This major increase was to cover additional costs for hospital insurance. In addition, certain costs are carried in the public works estimates covering maintenance of provincial hospitals. The Department of Public Works also carries each year, about \$3,000,000 for new buildings for the Department of Public Health. The welfare estimates in 1958-59 were \$14,201,600. The total provincial budget, 1958-59 was \$258,064,093. As the population of the province has grown and the services of the Department of Public Health have developed, the organization has become more complex and the size of the Department has grown until it now employs 2,300 persons. Welfare services in Alberta are administered under the minister of public welfare assisted by a deputy minister of welfare.

#### DIVISION OF LOCAL HEALTH SERVICES

Responsibility for health services rested with each local municipality until 1929 when legislation was passed providing for the organization of health units.

The first two rural health units were opened in 1931 at High River and Red Deer through the co-operation of a group of municipalities aided by the provincial government and the Rockefeller Foundation. The advantages were quickly recognized but because of the depression, it was seven years before the third health unit was established at Lamont. More recently, this service has expanded rapidly until now practically all the settled parts of the province are covered, excluding the cities of Edmonton and Calgary. There are now 21 health units serving an average population of 27,000, each with a staff of a medical officer of health, 4 public health nurses, 1 sanitary inspector, a secretary-technician and a part-time secretary-treasurer. The location of these units is shown on the accompanying map. The Rockefeller Foundation assisted in the establishing of the first two units. Subsequently, the cost of operation was divided evenly between the provincial government and the local municipalities. In 1949, the provincial government increased its share of the approved budget to 60 per cent. Federal public health grants contribute to the provincial share. In 1958, the method of provincial payment was adjusted to a per capita rate which varies according to the size of the unit. This averages about \$1.20 per capita. The municipalities which constitute the unit must provide an amount equal to at least two thirds of the provincial grant. The Department provides technical advice and supervision through the Division, but the administration is in the hands of the local boards of health composed of members appointed by the participating municipal council. Each health unit is a union of a group of municipalities working, under the direction of elected counsellors of a local board, to provide better community health.

#### *Communicable Disease Control*

The supervision of communicable diseases, except tuberculosis and venereal diseases, is maintained by the Division of Local Health Services. Communi-

cable diseases are reported by the local health authorities and the necessary records and reports are prepared at the divisional office. Weekly reports are supplied to the Department of National Health. The division also supervises the supply of communicable disease biologicals.

### *Medical Entomology*

In 1938, a human case of what appeared to be bubonic plague was observed in southeastern Alberta. The services of Mr. J. H. Brown M.Sc., entomologist, were made available by the University of Alberta and studies were commenced. In 1939, *bacillus pestis* was identified in ground squirrels in that section. Shortly afterwards, cases of Rocky Mountain Spotted Fever were identified in the Manyberries area. Mr. Brown's appointment was Canada's first full-time appointment of a public health entomologist. In addition, this service now is concerned in the supervision of control measures of Colorado tick fever, tick paralysis and other insect-borne diseases.

### *Nutrition*

In 1943, a nutritionist was appointed as an adviser to the Department and to local health authorities and has been maintained since that time. In addition, the Department of Agriculture maintains a group of home economists in the field, who give outstanding service in nutrition.

### *Public Health Education*

In 1928, Alberta started its first formal health education program with the appointment of Mr. F. T. Cook. For the first few years his work was almost entirely in the venereal disease field. This was soon broadened to cover other health education patterns. There is now an extensive service with a large library of educational material including books, pamphlets, moving pictures and film strips. The staff is available to all health areas for advice and demonstrations.

## DIVISION OF VENEREAL DISEASE CONTROL

Immediately after World War I, with federal assistance, a program was established aimed at controlling venereal disease. With various ups and downs this program has been maintained. Substantial headway has been made in the control of syphilis. This disease is now comparatively rare and its sequelae which used to cause so much trouble are now practically unknown. Gonorrhea, however, is very common but here also, the complications have almost disappeared due to the excellent results obtained through modern treatment.

Free diagnostic and treatment clinics for venereal diseases are provided in Edmonton, Calgary, Lethbridge and Fort Saskatchewan gaol. In addition, a mobile clinic serves the remote areas. The division offers advisory services to physicians throughout the province and supplies drugs without charge for treatment of venereal diseases. Cases and contacts are followed and efforts made to determine the source of infection. Through an amendment to the Solemnization of Marriage Act both parties are required to present to the issuer of marriage licenses or to a clergyman, a certificate certifying that a specimen of blood for the serological test for syphilis has been taken. An active program of education is conducted through lectures, films and literature.

### DIVISION OF TUBERCULOSIS CONTROL

Since 1925, the province has been providing sanatorium service for cases of pulmonary tuberculosis. At first, a charge was made against the municipality where the patient resided, with the province carrying the residual cost. In 1936, the municipalities were relieved of this cost and treatment was provided without charge to the patient. In 1948, other forms of tuberculosis were added.

The division operates two sanatoria for the treatment of tuberculosis, one serving northern Alberta—Aberhart Memorial Sanatorium, Edmonton—and one serving southern Alberta—Baker Memorial Sanatorium, Calgary—providing six hundred beds. Free treatment for all types of tuberculosis is provided. Diagnostic clinics function at the two sanatoria and in Calgary, Drumheller, Lethbridge, Camrose, and Vegreville. In addition a mobile clinic is operated.

Mass X-ray surveys and rehabilitation work are functions of the Alberta Tuberculosis Association which co-operates closely with the division. The Association has also supplied miniature X-ray machines to many hospitals, with the intention that almost all admissions shall be X-rayed. The operating cost is shared equally by the Association and the province.

### DIVISION OF NURSING

In 1950, through the Nursing Service Act, provision was made to expand the district nursing service. This service was provided in 1919 to assist in meeting the needs of outlying communities which had not medical or hospital service. The enlarged service is now known as the municipal nursing service. A municipal nurse may be appointed by a municipality or by the nursing division for the purpose of providing nursing service of a preventive and emergency treatment nature to people in the more remote areas. There are now 30 municipal nursing districts. In each, the municipality appoints a nursing service committee which provides necessary transportation for the nurse, supplies for her program, and maintenance of the cottage. The department of health reimburses local municipalities to the extent of 60 per cent of the operating cost of approved services given by one or more nurses. Seven nurses are serving in organized municipal districts and 23 nurses in unorganized improvement districts. Services rendered include preventive and emergency service with supervised home nursing care, maternal and child health programs and attention to the problems of environmental sanitation. Inspection and supervision are provided of water supplies and sewage disposal facilities, milk supplies used for public consumption, etc. This service is provided through the division of sanitary engineering.

Because of the shortage of graduate nurses, the province decided in 1947 to take over a school of nursing aides which had operated for a short period after the war for the federal rehabilitation program. This school was Canada's first on a provincial basis and since that time has been Canada's most active school for nurses' aides. The second school was opened in 1958 at Edmonton. In 1953, the Department of Public Health decided to assist the cost of nursing education by paying to hospitals that operated a school of nursing the sum of \$300 for each nurse that graduated from the school. This was the first time that any direct grant had been made by a province towards the cost of educa-

ting graduate nurses. This grant is now incorporated in the cost of operating the hospital insurance program.

### DIVISION OF PROVINCIAL LABORATORIES

In addition to providing bacteriological, pathological, serological and chemical examination, the Provincial Laboratory undertakes the distribution of sera and biological products for the division of communicable disease control. Services are available to municipalities, private physicians, hospitals, schools, the general public and especially the communicable diseases control and sanitary engineering divisions of the department. It serves also the Attorney General's department in medico-legal service. Since 1911 the Provincial Laboratories have been closely related with the University of Alberta and a modern laboratory building on the campus houses the various sections. The director of the Laboratories and several senior members have teaching appointments in the faculty of medicine. A branch to serve southern Alberta was established in Calgary in 1950.

### SANITARY ENGINEERING DIVISION

The major job of day-to-day sanitary inspection and education in Alberta is in the hands of the local health department. The Provincial Division of Sanitary Engineering assists local health departments. Through trained sanitary inspectors, food supplies, restaurants, tourist and logging camps are supervised.

Among the responsibilities are the supervision of local water supplies and sewage disposal systems and advising the local operators. Alberta has an unusual number of small systems. In 1945, there were 38 municipalities with water and sewerage systems. In January 1958, this had grown to 181. This program has extended into very small communities: municipalities with over 1,000 population—61 systems; population 500 to 1,000—48 systems; 400 to 499—17 systems; 300 to 399—23 systems; 200 to 299—23 systems and less than 200—9.

The total population of all cities, towns and villages is 677,642 of which over 650,000 have water and sewerage systems. This extension has resulted mainly from money supplied at low interest rates by the province to the municipalities for local improvements. In smaller communities, the method of sewage disposal is commonly the use of natural or artificial lagoons.

In recent years expanding industrialization has created major problems of water supply and stream pollution, particularly in the Bow and North Saskatchewan Rivers. The major industries which create problems are the primary oil industry, petro-chemical industries, production of by-products from the development of gas such as sulphur, and pulp and paper industries. A stream pollution team was developed in Alberta in 1950, so a very satisfactory baseline was found for major streams prior to the impact of new industries and the enlargement of the major cities.

Air pollution is beginning to show as a problem though the scattered nature of the industrial development so far has meant that this question has not yet reached major proportions. Also, the main fuel in Alberta is natural gas, so smoke is not troublesome.

### DIVISION OF VITAL STATISTICS

The Deputy Minister of Health is Registrar General. The director of the division is Deputy Registrar General. There are 500 communities in Alberta with a local registrar in each. The division collects, arranges and tabulates statistics within the province relating to births, marriages, divorces, adoptions and changes of name. It administers the Marriage Act and publishes the annual report of vital statistics.

### MENTAL HEALTH DIVISION

The work of the division may be considered in three main sub-divisions—institutions, guidance clinics, and eugenics program. Provincial mental institutions include the Provincial Mental Hospital, Ponoka, and the Provincial Auxiliary Hospital, Claresholm, and the Provincial Auxiliary Hospital, Raymond. The Provincial Training School for mental defectives is located at Red Deer and the Provincial Mental Institute is in Edmonton. In addition, the Rosehaven Auxiliary Hospital is located at Camrose. In all, 4,503 beds are provided. Training schools for nurses and attendants are operated as a regular part of the institutional service. Psychiatric wards are operated under the hospital insurance program at Edmonton and Calgary; a substantial amount of out-patient service is also provided at these centers.

"Guidance clinics" are held regularly in Edmonton, Calgary, Lethbridge and Red Deer. Visiting clinics are held in a number of municipalities. In 1957, the staff dealt with 1,633 new cases and 636 review cases.

#### *Sexual Sterilization Act*

The Sexual Sterilization Act was assented to at the 1928 session of the Legislature. As Alberta was the first province in Canada and first in the British Empire to enact such legislation, it is of interest to review the essential provisions of this Act. For the purpose of the Act a board was created consisting of four members, two of whom are medical practitioners nominated by the Senate of the University of Alberta and the Council of the College of Physicians, respectively. The two remaining members are persons other than medical practitioners and are appointed by the Lieutenant-Governor-in-Council. This board is known as the Eugenics Board. If the Board is unanimously of the opinion that procreation on the part of a psychotic person, a mental defective, or a person suffering from neurosyphilis, epilepsy or Huntingdon's chorea would result in injury to the descendant then the Board may order such surgical operation as will sterilize the individual. Consent of the patient or of the next of kin is required only in case of those who are psychotic. The Act gives protection to the board, to those who give information to the board and to those who do the operation or assist at it.

Four meetings of the Eugenics Board are held each year, including sessions in Edmonton, at the Provincial Mental Hospital, Ponoka, at the Provincial Training School, Red Deer and at Calgary. Eighty-two operations, 49 male and 33 female were performed during 1957, bringing the total number of operations performed since this work was undertaken to 1,634 of which 692 are male and 942 female cases.



## HOSPITALS DIVISION

This division is primarily responsible for the hospital insurance program which became effective April 1, 1958. Since every resident of the province is eligible for necessary hospital service, it is necessary to supervise the type of facility which is available and the service that is rendered by the hospital. This supervision relates to all general hospitals and to facilities which are related to general hospitals, such as nursing schools or the blood donor service.

All maternity patients satisfying residence requirements may be hospitalized for a period up to twelve days at provincial expense and a provincial grant is available to assist those who receive maternity services at home.

Hospitalization has been supplied without charge for a number of years to old age security recipients who qualify for the supplementary pension, old age assistance pensioners, blind pensioners, recipients of mothers' allowance and widow's allowance, as well as dependents of such persons. These persons now come under the Alberta hospital insurance program with the province paying the nominal daily charge. The local municipality is responsible for this co-insurance for indigent cases and is reimbursed for 80 per cent of this cost by the provincial government.

In 1917, the province enacted the first Municipal Hospitals Act under which a convenient municipal area might tax itself to build and operate a hospital. At first, these hospitals were small and served an area which was entirely rural. As time went on this type of hospital became larger and even the smaller cities came under this system. In these municipal hospitals the patient paid one dollar per day for the service and the hospital district covered the rest of the cost by a property tax. As costs increased, the dollar per day has been increased until it now varies from \$1.50 to \$2.00 per day depending on hospital size.

Also, with the rising costs, the province came more into the picture with grants-in-aid. This steadily increased until it was considered advisable to provide hospital insurance on a province-wide basis. This commenced April, 1958. Under this program the co-insurance fee of \$1.50 to \$2.00 per patient day was continued and the province pays the balance of the approved cost. Hospitals which have a higher than normal cost of operation must provide for these extra costs from another source, usually the municipality. To assist in the program, a three-mill tax is levied by all municipalities to provide \$3,500,000 to the fund or about 10 per cent of the full operating costs.

In paying the hospitals, the province has developed an unusual method. A monthly payment is made to each hospital based on its number of beds. This payment is at a level which covers the approved costs of the hospital less the income from other sources. This is spoken of as the "stand-by" cost since it is the cost of maintaining a hospital ready to receive patients, while the co-insurance paid by the patient on a per diem basis is an extra cost occasioned by his presence in the hospital.

On July 1, 1958, the agreement with the federal government came into effect permitting the province to obtain about 46 per cent of the recognized costs of the scheme. The federal government did not recognize the co-insurance as being shareable and, in addition, required that the province share in the cost of service to the Indians and in the cost of service to certain veterans. These



had previously been recognized as a federal responsibility. Thus, the federal government will actually cover about one third of the cost of the Alberta program. The provincial share comes from the general revenue of the province. No special tax is levied.

#### BLOOD DONOR SERVICE

As part of the assistance to hospitals, the Canadian Red Cross Society and the province are supplying a very complete blood service. In 1947, Alberta became the second province in Canada to provide such a full scale service. At that time an agreement was entered into between the province and the Society and under this agreement the province has built two laboratories (at Edmonton and Calgary) and maintains these with light, heat, water and janitor service. In turn, the Society procures the blood from the public, operates technical service for typing, cross-matching, etc. and arranges that the processed blood is transmitted to the hospitals as required. In addition, the Society supplies an Rh testing service for the hospitals and the doctors of the province. By a special arrangement, effective for the year 1957 and following, the province has agreed to pay the cost of unusual cross-matching and Rh testing and to pay toward the deficit which is expected to be about \$100,000 a year.

#### MEDICAL SERVICES DIVISION

Because of the volume of work, a separate Medical Services Division was formed in 1957. The Medical Director is Inspector of Hospitals as relating to medical services and is a medical adviser to the Division of Hospital Services.

By special arrangements with the College of Physicians and Surgeons, a complete medical and surgical service has been organized for the pensioner groups. Similarly, a service in dentistry which is almost complete has been provided. Necessary eye testing and glasses also come under this program. Surgical care, splints, etc. are provided through the Medical Services Division for polio cases, but rehabilitation services are provided by the Department of Public Welfare.

The training of nursing aides comes under this Division. A school was established in Calgary in 1947 which graduates about 25 trainees every five weeks. The course covers the fundamentals of bedside nursing and lasts ten months. Half the period is spent in the central school and the other half in various institutions where field work can be covered. The graduates have made an enviable name for themselves and the demand for their services has been so great that a second school was opened in Edmonton early in 1958.

It had been observed for some time that the smaller hospitals of Alberta were having trouble maintaining the necessary technical assistance in laboratory and X-ray services. Part of the difficulty resulted from the fact that there was not enough work in each of these fields to warrant a fully trained technician in each craft. Therefore, in 1954, with the help of a Federal Health Grant, a school was established to train individuals in the fundamentals of these two fields. The complete course lasts six months and is now turning out about 18 graduates per year. The results have been very satisfactory but the number graduating does not meet the demand.

Commencing April 1, 1958, this division began providing penicillin tablets to children who have had an attack of rheumatic fever. The use prevents secondary attacks of rheumatic fever and heart disease.

Since 1927 the Department has been supplying insulin to diabetics who are in needy circumstances, the phrase being interpreted liberally.

*Cerebral Palsy.* Special clinics were established in Edmonton and Calgary in 1950 and 1952. These clinics are now operating in special buildings built for the purpose. Following a diagnosis, children from five to twelve years of age are provided with necessary physiotherapy, speech therapy and occupational therapy aimed at obtaining the greatest possible rehabilitation. A grant is paid to the local cerebral palsy societies in Edmonton and Calgary so that they can provide board and lodging for cases whose homes are not in the cities. Usually, patients are given service at the clinic for three months and are back at home for three months. An educational program is provided for the parents so that the program may be continued at home.

*Rheumatoid Arthritis.* Since 1949, the Department has provided a free treatment program for persons with rheumatoid arthritis who are under 25 years of age. This program includes hospital, medical and drug service.

*Cancer Services.* In 1940, the Cancer Treatment and Prevention Act was passed and a diagnostic clinic was set up in Edmonton for any resident of the province for 12 of the preceding 24 months. In 1941, radiological treatment was added and in 1942 necessary surgery became part of the program. At the Edmonton Clinic "heavy" radiology in the form of a "cobalt bomb" was commenced in 1954. At this time the Cancer Service assumed responsibility for radium therapy. Clinics are provided also in Calgary and Lethbridge. A new cancer building is now being constructed in Calgary which will make cobalt therapy and "heavy" X-ray and provincial radium available. Where indicated, surgery is authorized and suitable surgeons are paid for this work. Palliative surgery, radioactive isotopes and hormones were introduced as part of the clinic service in 1958.

### NATIONAL HEALTH WEEK

Canada's fifteenth consecutive National Health Week will be celebrated February 1-7, 1959. The objective of Health Week is to make everyone conscious of the value of good health and the importance of taking the trouble to keep it. Health Week is now a national institution and is organized by the Health League of Canada in co-operation with departments of health and education across Canada. Attention of all citizens is drawn to the problems of infant mortality, accidents, alcoholism, and to the great industrial loss occasioned through sickness. The value of fluoridation, the importance of nutrition and the need for physical fitness are other subjects to which attention is being drawn during National Health Week.

The Health League has supplied informative literature suitable for radio releases, newspaper and television announcements. National Health Week merits its place as the greatest single annual publicity event in health work in Canada.

## Disc-Plate Assay of Poliomyelitis Antibodies

LEONE N. FARRELL,<sup>1</sup> M.A., Ph.D., and D. B. W. REID,<sup>2</sup> M.A., M.Sc.

AT the present time, two general methods of measuring *in vitro* the quantity of circulating type-specific poliomyelitis antibody are widely accepted. The first utilizes the original observations of Enders, Weller and Robbins (1, 2) of the cytopathogenic effect of the viruses upon established tissue cultures and its inhibition by type-specific antiserum. The other was developed by Salk, Youngner and Ward (3) after Dulbecco and Vogt's (4) method of dispersing tissue cells with trypsin became available. It depends upon the inhibition by viruses of glycolytic metabolism of developing tissue cells, which may be detected by colour change of an indicator of hydrogen-ion concentration (5). This effect also was observed with poliomyelitis by Enders and his associates. Both methods call for preparation of a series of dilutions of serum with which a standard dose of virus is combined under arbitrary conditions.

Kalter (6) reported that filter paper discs saturated with serum and placed on bottle cultures neutralized virus in a second disc placed upon the first and that such titrations compared favourably with those made by the usual tube method. De Somer and Prinzie (7) found that the size of the zones of inhibition produced on solidified infected bottle cultures by filter paper discs saturated with antiserum was related to the amount of antiserum. This procedure, which avoided the use of special incubators with carbon dioxide, was proposed as a possible method of measuring concentration of antibody. The introduction of tris buffer (8, 9) simplified tissue culture in Petri plates, and we have found these convenient for applying serum with either discs or cups and for measuring the resulting zones of inhibition. These methods are similar, of course, to the established cup-plate method (10, 11) and the paper disc technique (12, 13) for the assay of penicillin.

This report describes procedures for the assay of poliomyelitis antibodies using paper discs with tissue cultures in Petri dishes. Typical data are presented for rabbit, monkey and chick sera. The precision of the method is set out.

### MATERIALS AND METHODS

**Tissue cultures.** Heavy-based Petri plates designed for assay of antibiotics were inoculated with a minimum of 1.5 million trypsin-dispersed rhesus monkey kidney cells (14) suspended in 20 ml. lactalbumen hydrolysate medium (15) to which 0.028% sodium bicarbonate, 0.01M tris buffer, 200 units/ml. penicillin and 2% bovine serum were added at the time of inoculation. Plates were placed on wooden trays tightly enclosed in polyethylene bags and incubated at 38.5° C on shelves protected from draughts. In some tests, plates were used after 5 or 6 days without washing. Usually, the supernatant medium was replaced after 5 days with medium 597L and

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incubation continued for 3 more days. Medium 597L was prepared by filtering a solution of 0.1% bovine albumen Fraction V and 0.1% yeast extract in chemically-defined medium H597, and adding 0.1% sodium bicarbonate, 0.01M tris buffer and 200 units/ml. penicillin at time of use. Medium H597 contained all the organic components of Medium 199 (16) except the nucleic acid constituents. It was made up in Hank's salt solution without bicarbonate.

*Virus inoculum.* Stock seed pools of Mahoney (Type 1), M.E.F.I. (Type 2) and Saukett (Type 3), prepared as described before (17), were stored in small quantities at  $-20^{\circ}\text{C}$ . Dilutions for use as inoculum for tissue culture plates were made from time to time in phosphate buffered saline (2) containing 0.08% gelatine (18) and stored in the refrigerator at  $6^{\circ}$  to  $10^{\circ}\text{C}$ . Such dilutions had a remarkably useful degree of stability in respect to plaque count when tested under standard conditions. Most preparations were used over periods of 5 to 15 weeks without apparent loss in count, and one was used for 24 weeks. The effect of the amount of inoculum on the zones of inhibition was examined under a variety of conditions. In general, sufficient virus to produce confluent destruction of unprotected cells gave the sharpest zones of inhibition, but excess led to significantly smaller zones, with irregular areas or complete loss of protection at low concentrations of antibody. The size of the optimum dose was influenced by many factors: immunological type of virus, species of monkey used for tissue cells, age of tissue culture, time of incubation at all stages, and so forth. For the conditions used in most of the experiments considered here, the optimum dose/plate was: Mahoney, 3,000 plaque forming units (pfu); M.E.F.I. 8,000 pfu; Saukett, 5,000 pfu. In early experiments, 1 hour at  $38.5^{\circ}\text{C}$  was allowed for adsorption of virus before the agar overlay was added. Subsequently, comparative tests led to immediate addition of the agar as the method of choice.

*Agar Overlay.* The basal nutrient solution was 0.5% lactalbumen hydrolysate, 0.2% yeast extract and 0.2% bovine albumen Fraction V dissolved in double strength Earle's solution without bicarbonate. At time of use, 0.02M tris buffer, 0.224% sodium bicarbonate and 400 units/ml. penicillin were added. This double strength nutrient solution was warmed to  $43^{\circ}\text{C}$  in a waterbath, then added with an automatic syringe in 6 ml. amounts to 6 ml. melted 3% Noble agar in tubes held in the same waterbath. Plates were left at room temperature ( $22^{\circ}$  to  $26^{\circ}\text{C}$ ) for 1 hour to attain a firm surface. Otherwise, areas of apparent toxicity formed below the discs and obscured small readings.

*Technique of application of serum.* Filterpaper discs (Schleicher and Schuell, 740E,  $\frac{1}{2}$  in.) were autoclaved in Petri plates at  $120^{\circ}\text{C}$  for 30 min. and dried in the oven at  $120^{\circ}\text{C}$  for about 30 min. In the initial tests, 4 discs were placed on the surface of the agar and 0.08 ml. of serum dilution added to each at once (19) but later, 0.4 ml. of serum was added to 3 discs placed in a section of a Felson quadrant culture dish. With this technique, the distribution of the serum over the 3 discs appeared to be uniform after one hour at room temperature, when the discs could be placed on the surface of the agar at leisure.

*Incubation and reading.* In many experiments referred to in this report, completed plates were placed in the incubator at once. Comparative tests showed that refrigeration for one night gave larger and clearer zones of inhibition, and this was adopted. In some experiments, replicate plates were stained (1/5,000 neutral red) after 2 and 3 days (Mahoney), 2, 3, and 4 days (M.E.F.I.), and 3 and 4 days (Saukett). With the strains and doses of virus used, the most reliable results were obtained on the third day with all types. The diameter of the zones was measured by placing the plate on a card on which circles had been drawn which differed in diameter by 2 mm., and estimating to the nearest mm.

## RESULTS

### *Relation between Dilution of Serum and Size of Zone of Inhibition*

A number of preliminary experiments were carried out to investigate the relationship between dilution of serum and the size of the zone of inhibition

TABLE I  
DIAMETER OF ZONES OF INHIBITION OF POLIOMYELITIS VIRUS  
PRODUCED ON TISSUE CULTURE PLATES BY DILUTIONS OF A  
TRIVALENT MONKEY ANTISERUM

Virus	Plate	Diam. (mm) of zones found with serum dilution			
		Undil.	1/4	1/16	1/64
Mahoney	1	23	17	11	tr*
	2	21	16	10	0
	3	20	14	8	0
M.E.F.1	1	23	17	tr	0
	2	24	18	13	0
	3	25	19	14	tr
Saukett	1	20	14	tr	0
	2	19	13	tr	0
	3	20	14	8	0

\*Trace of inhibition.

produced. Table I gives results obtained in one of these with four dilutions of a trivalent monkey serum. Three plates were used for each immunological type of virus. A linear trend of zone size on serum dilution is evident for each plate. In some instances, readings of diameters less than that of the disc (12.2 mm.) could be made with assurance, as with serum diluted 1/16 against Mahoney virus. In other instances, however, only a trace of inhibition was recorded when 8 to 10 mm. might have been expected, as with the same serum dilution against M.E.F.1 and Saukett viruses. It may be emphasized that no effect of the disc itself has been observed, provided the surface of the agar was firm before the disc was applied. Evidently, readings of diameters less than 10-12 mm. may not be reliable. It will be noted that some variation seemed to occur from plate to plate.

The effect of varying the concentration of antiserum was more fully investigated in 10 experiments with Mahoney and Saukett viruses under various conditions, using 6 dilutions of type specific hyperimmune rabbit serum in each. As only 4 dilutions of serum could be tested on each plate, a balanced incomplete block arrangement requiring 15 plates was adopted (20). This gave 10 observations per dilution in each experiment. In two of these experiments the plates were refrigerated before final incubation. The average size of the zones of inhibition for the various dilutions in these two experiments are plotted in figure 1. This shows that, for both immunological types, the relationship between the average diameter of the zones of inhibition and logarithm of serum dilution was a straight line over a wide range. There was no evidence of significant deviation from linearity in either experiment. For Mahoney, the regression coefficient was 8.25 mm. for a tenfold increase in concentration; for Saukett it was 8.69 mm. The standard deviation of an individual reading, within plates, was 0.66 mm. for Mahoney and 0.60 mm. for Saukett.

#### *Reproducibility of Assays by Disc-plate Titration*

To assess the reliability of serum titrations by the disc-plate method, repeated experiments were carried out to determine the potency of a trivalent monkey serum in terms of a trivalent rabbit serum. A high and low concentration of both sera were used on each plate, the concentrations being selected so that the zones of inhibition were similar for the two sera. Six plates were used for

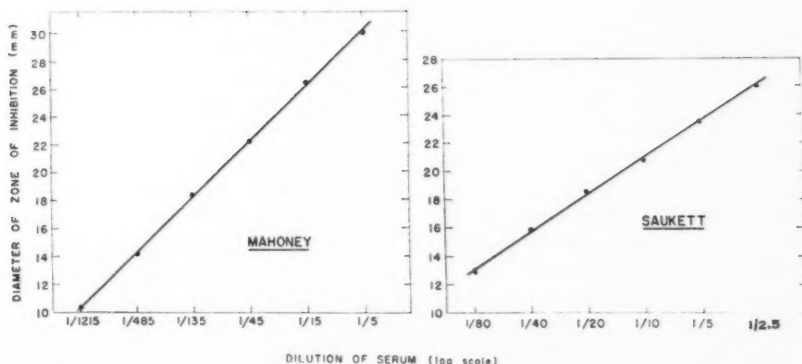


FIG. 1 Relation between dilution of antiserum and diameter of zone of inhibition. Each point represents the average of 10 observations obtained from 15 plates, 4 dilutions per plate, in a balanced incomplete block design.

each immunological type with one exception. The titrations were repeated on 8 different occasions. The logarithm of the relative potency of the trivalent sera was determined for each plate and these were averaged. The final relative potencies are given in table II.

The standard error of an estimate of relative potency determined from an individual plate was found to be about 14% for measurements made on the same occasion. This was calculated from the actual fluctuation which occurred among estimates made on the same occasion. For an average of 6 plates the standard error of relative potency was about 6%, as can be seen from table II. In the case of Type 1 and Type 2 the average values of the relative potency varied significantly from experiment to experiment.

TABLE II  
RELATIVE POTENCY ( $\pm$  STANDARD ERROR) OF RABBIT SERUM STRS  
IN TERMS OF MONKEY SERUM RVAM

Experiment	Mahoney Type 1	M.E.F.1 Type 2	Saukett Type 3
174	8.44 $\pm$ .48	3.00 $\pm$ .24*	3.57 $\pm$ .22
175	8.34 $\pm$ .48	2.77 $\pm$ .16	3.85 $\pm$ .24
176	7.84 $\pm$ .45	2.80 $\pm$ .16	3.62 $\pm$ .22
177	7.61 $\pm$ .44	2.45 $\pm$ .14	3.62 $\pm$ .22
179	9.11 $\pm$ .52	2.31 $\pm$ .13	4.17 $\pm$ .26
180	6.48 $\pm$ .37	2.32 $\pm$ .13	3.26 $\pm$ .20
181	7.67 $\pm$ .44	2.07 $\pm$ .11	3.24 $\pm$ .20
184	8.02 $\pm$ .46	2.15 $\pm$ .12	3.64 $\pm$ .22

\*Based upon 3 plates; all other estimates based upon 6 plates.

#### *Disc-plate Titration Applied to Potency Testing of Poliomyelitis Vaccine in Chicks*

The comparatively small internal variation of this method, together with the range of the linearity of the dose-response curve, suggested that disc-plate titration of antibody might well be applied to the potency testing of



poliomyelitis vaccine in chicks. This possibility was examined for sera from chicks vaccinated according to the method proposed by the U.S. Division of Biologics Standards for poliomyelitis vaccine (21). In these tests 6 groups of chicks received 2 doses, 2 weeks apart, of 1 ml. of test and reference vaccines, each at three tenfold dilutions. Sera taken 1 week after the second dose from chicks which had received the two strongest vaccine dilutions were titrated by the disc-plate method undiluted, with one serum from each of the four groups represented on every plate.

Sera from 6 chick tests were used in this way against all three immunological types of virus. Data for the Type 2 component of one of these, for which the results of full titration by the metabolic inhibition test were available, are given in table III. As these show, the diameter of the zone of inhibition varied

TABLE III  
ANTIGENICITY OF VACCINES IN CHICKS: TYPE 2 COMPONENT  
Diameter (mm) of zones of inhibition produced by undiluted  
serum from individual chicks vaccinated with

Plate No.	Vaccine 85		Vaccine 5	
	Undiluted	Diluted 1/10	Undiluted	Diluted 1/10
1	19	22	23	0
2	22	0	23	4 (tr)
3	22	23	30	19
4	25	23	4 (tr)	0
5	19	4 (tr)	17	17
6	22	17	14	21
7	27	17	22	13
8	21	20	24	12
9	28	20	18	15
10	22	0	27	16
11	20	17	20	22
12	19	22	26	0
13	22	24	28	10
14	19	19	15	23
15	27	18	24	22
16	18	15		
Mean	22.0	16.3	21.0	12.9

widely from chick to chick within a group. The appearance of "trace" readings or no detectable inhibition was not limited to serum from groups which received diluted vaccine, although of course it was more common there. To make calculations possible, trace readings were scored as 4 mm., and no detectable inhibition was scored as 0 mm. In other tests in which a relatively large number of such cases occurred this procedure was found unsatisfactory. In this assay, with such arbitrary scoring, the standard deviation within groups was 6.81 mm. The arrangement of sera on the plates was ignored in these calculations because chick variation was found to be very large in relation to plate differences. The change of average diameter with dilution of vaccine was 6.84 mm. for a tenfold increase in concentration. This gives a value for  $\lambda$ , the ratio of standard deviation to slope of regression line, of 1.0, which may be compared with  $\lambda = 1.1$  for the same sera titrated by the metabolic inhibition method. From the results then of this assay it would appear that the two methods were of about equal precision.



The correlation between individual results by the two methods was fair, the average correlation for the same dilutions of vaccine being 0.70 for this assay. The relative potency of vaccine 85 in terms of vaccine 5, was found to be 2.1; for the metabolic inhibition test it was 2.2. These figures are in better agreement than in other tests which were carried out. In general, the results suggest that the single disc test arranged as described gave about the same information as a full titration by the metabolic inhibition test.

The sensitivity of the two procedures was compared with sera from chicks receiving dilute vaccines. The numbers positive to one method but not to the other are given in table IV. These results show that for Mahoney, at least,

TABLE IV  
DETECTABLE ANTIBODY IN SERUM FROM 86 CHICKS  
TESTED BY DISC-PLATE AND METABOLIC INHIBITION  
TITRATION

Virus types	Total No. of sera	Number positive to	
		Disc only	M.I.T. only
Mahoney	86	31	0
M.E.F.1	86	2	8
Saukett	86	8	0

the disc method may be more sensitive than the metabolic inhibition test, as usually performed. That the reverse is the case for M.E.F.1 virus may be attributed to the very large inoculum used in some of the early disc-plate tests.

#### SUMMARY

A procedure has been developed for the titration of poliomyelitis neutralizing antibodies by measuring the size of the zone of inhibition produced by serum applied with paper disc to infected tissue cultures in Petri plates. Technical details are given. The relationship between the diameter of the zone of inhibition and the logarithm of serum dilution was found to be linear over a wide range. The procedure has been used successfully with rabbit, monkey and chick sera. It has been established that the strength of one serum in terms of another could be determined from two dilutions of each on a single plate with a standard error of about 14%, though some additional variation occurred if the titrations were carried out on different occasions. The application of the method to estimate the relative potency in the chick assay of poliomyelitis vaccines has been investigated. The reliability appeared to be similar to that of the metabolic inhibition test with full titration of sera. The method was found to be much simpler and less laborious than the metabolic inhibition test. For Mahoney its sensitivity was greater than the metabolic inhibition test as usually carried out.

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#### ACKNOWLEDGEMENTS

We acknowledge gratefully the assistance of the late Dr. C. W. J. Armstrong, Mr. F. C. Potter and Mr. F. T. Shimada in supplying sera and making available results of metabolic inhibition titrations.

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## THE ASSOCIATION - 50th YEAR - THE JOURNAL

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### THREE REMARKABLE EVENTS IN 1882

"The first was when Pasteur won his crowning glory by accepting the challenge of the Melun Agricultural Society and vaccinated on the 5th of May 25 sheep with attenuated anthrax virus and again on the 17th, with a stronger virus and then on the 31st inoculated these with a virus of normal virulence at the same time with 25 non-vaccinated sheep. On June 8th all the latter were dead and all the first save one, were well. . . . The second event equally remarkable was the announcement in April by Professor Robert Koch of his discovery of the germ of tuberculosis. . . . And the third event in 1882 was the passing of an act by the Government of Ontario establishing the Provincial Board of Health."

Peter H. Bryce, M.A., M.D.  
 History of Public Health in Canada  
 The Canadian Therapeutist and Sanitary  
 Engineer (incorporating the Canadian  
 Journal of Public Health)  
 Volume I, June 1910, p. 290.

**ABSTRACTS OF PAPERS PRESENTED AT THE  
TWENTY-SIXTH ANNUAL CHRISTMAS MEETING OF THE  
LABORATORY SECTION, CANADIAN PUBLIC HEALTH  
ASSOCIATION, MONTREAL, DECEMBER 15 and 16, 1958**

**Observations on the Use of Tetrazolium Salts in the Vital Staining of Bacteria.**

L. EIDUS, B. B. DIENA and L. GREENBERG, *Laboratory of Hygiene, Department of National Health and Welfare, Ottawa.*

METABOLICALLY active cells take up tetrazolium salts readily, whereas the metabolically inactive bacteria refuse them and can be counterstained with a variety of stains. Using this principle, we have followed the growth cycle of *M. butyricum*, which will be demonstrated.

Different tetrazolium salts stain bacteria differently. Neotetrazolium is taken up by selected structures within the cell, whereas triphenyl tetrazolium is taken up more uniformly. In gram-positive organisms, both dyes are reduced to formazan which is firmly retained by the cell and which cannot be decolorized by either alcohol or acetone. Gram-negative organisms also reduce these dyes to formazan but this is readily lost when exposed to alcohol or acetone.

The mycobacteria are stained by neotetrazolium but not by triphenyl tetrazolium. With the triphenyl dye, formazan crystals are formed on the surface of the colonies and are found adjacent to the bacteria and floating free in the surrounding medium. Mycobacteria that have lost their acid-fast properties behave in a manner typical of gram-positive organisms.

**Studies on Haemolytic *Escherichia coli* Strains Associated with Oedema Disease (*E. coli* Toxaemia) of Swine.**

A. E. KELEN, *Division of Laboratories, Department of Health of Ontario, Toronto*; S. G. CAMPBELL and D. A. BARNUM, *Department of Bacteriology, Ontario Veterinary College, Guelph.*

HAEMOLYTIC *E. coli* strains isolated from affected pigs were investigated by means of serological, biochemical and sensitivity tests.

None of the strains examined proved to be identical to any of the enteropathogenic *E. coli* serotypes associated with infantile diarrhoea. The overwhelming majority of the isolates belong to three distinct serotypes, two of which are identical to serotypes encountered in the United States of America, Great Britain and Ireland. These two serotypes represent new additions to the *E. coli* antigenic schema (0138:K81 and 0139:K82, respectively). Although the third Canadian serotype and a third British serotype (OKE 68) have an unidentified O antigen in common, the Canadian serotype was found to have a different, and apparently new, K(B) antigen. Strains of the first two serotypes also differ biochemically from those of the third serotype. The former do not metabolize salicin but ferment saccharose; the latter do not utilize saccharose but are late salicin-fermenters. All these strains proved to be highly sensitive to Chloramphenicol, Streptomycin, Polymyxin "B", Neomycin and Furadantin. The majority of the strains were just moderately sensitive to Sulphadiazine and Tetracycline.

**Bactéries Anaérobies Réductrices du Soufre et Pollution des Eaux.**

R. DESROCHERS et V. FREDETTE. *Département de Bactériologie et Institut de Microbiologie et d'Hygiène de l'Université de Montréal.*

La présence de bactéries anaérobies réductrices du soufre, genre *Desulforibrio* ou *Sporovibrio*, a été démontrée dans un lac des Laurentides et dans la rivière Ottawa.

Dans une certaine région de cette dernière, l'on a pu dénombrer ces populations sur une distance de dix milles et y étudier les facteurs physiques et chimiques qui les font accroître ou décroître.

Les résultats acquis laissent entrevoir la possibilité d'exploitation rationnelle de ces bactéries pour l'assainissement de certaines eaux polluées.

### Variables Influencing the Preparation of Influenza Vaccines with Formaldehyde.

J. R. POLLEY, *Laboratory of Hygiene, Department of National Health and Welfare, Ottawa.*

AN investigation of the effect of temperature, formaldehyde concentration, pH and duration of treatment on the virus inactivation and antigenicity of influenza vaccines has been made. By decreasing the pH of the medium during the process of virus inactivation the margin of safety against loss of antigenicity is considerably increased. Vaccines prepared under widely different reaction conditions selected from the above study produced a specific antibody response and gave protection to challenge with live virus in animals. Lyophilized vaccines prepared under these conditions were still effective after storage for 2½ years.

### Etude des Propriétés Anaphylactiques du Plasma Bovin Despécifié.

A. G. BORDUAS, *Institut de Microbiologie et d'Hygiène de l'Université de Montreal.*

PARMI les nombreux substituts du plasma humain qui ont été proposés, le plasma bovin despécifié par le formol et la chaleur offre de nombreux avantages.

Bien que les propriétés antigéniques du plasma bovin soient fortement atténuées dans le traitement, elles ne sont pas complètement supprimées et le plasma bovin, ainsi despécifié, peut encore provoquer la formation d'anticorps précipitants et donner des réactions anaphylactiques.

Nous avons étudié, par la réaction de Schultz-Dale, les propriétés anaphylactiques du plasma bovin, despécifié par le formol à différentes températures.

Voici les conclusions que nous pouvons tirer des résultats obtenus:

- 1° Les plasmas bovins despécifiés à 100°C ou à 120°C sont impuissants à déclencher une réaction anaphylactique chez le cobaye sensibilisé au plasma bovin normal.
  - 2° Le plasma bovin despécifié à 100°C est encore capable de sensibiliser le cobaye aux protéines du plasma normal tandis que les préparations chauffées à 120°C, ½ heure ou une heure ont pratiquement perdu ce pouvoir.
  - 3° Si le plasma despécifié à 100°C peut déclencher des réactions faibles ou douteuses chez les cobayes sensibilisés avec la même préparation, les produits chauffés à 120°C, ½ heure ou 1 heure sont totalement impuissants à le faire.
- Les protéines artificiellement préparées par chauffage à 120°C en présence de formol sont donc nettement moins antigéniques que les préparations analogues obtenues par chauffage à 100°C.

Ce reste d'antigénicité est à peine décelable par la réaction de Schultz-Dale chez quelques cobayes seulement.

### Human Botulism Episodes (Types E and B) Due to Salmon Eggs.

C. E. DOLMAN, MARIA TOMSICH and C. C. R. CAMPBELL, *Department of Bacteriology and Immunology, University of British Columbia and Connaught Medical Research Laboratories, Western Division, Vancouver;* and W. B. LAING, *Skeena Health Unit, Prince Rupert, B.C.*

IN August, 1957, three Indian women died at Prince Rupert, B.C., within 48 hours after eating raw salmon eggs which had been kept in a jar outside their house for about 3 weeks. A residual sample contained roughly 250 mouse MLD of type E botulinus toxin per g. From these eggs, and from the stomach contents of one of the victims, a strain of *Cl. botulinum* type E of low toxicity was isolated. Another type E culture, of higher toxigenic capacity, was isolated from oolichan fish oil found in the house. This oil contained no botulinus toxin, and was unconnected with the outbreak. The victims' stomach contents had a pH range of 6.2-6.4, and contained 4,000, 8,000 and 60,000 mouse MLD of type E toxin per ml., displaying 16-, 32- and 240-fold "activation".

In July, 1958, an Indian woman from near Prince Rupert, died in hospital from bronchopneumonia complicating botulism, 11 days after eating lightly fried fish eggs. These were taken from a jar containing roes of several spring salmon caught in the vicinity 5-6 days before. An extract of the remaining salmon eggs contained about 4,000 mouse MLD of type B toxin per g. After 1 hour's incubation with 1 per cent trypsin, the toxicity of this preparation increased to around 100,000 MLD. A non-proteolytic strain of *Cl. botulinum* type B was isolated from the salmon eggs, which produced toxin of potency ranging from 10,000 to 100,000 mouse MLD per ml. Filtrates of such toxic cultures could be trypsin-activated up to potencies of roughly 500,000 MLD per ml.

### Hypersensitivity and Circulating Antibodies in Johne's Disease.

CHRISTINE E. RICE and E. ANNAU, *Department of Agriculture, Health of Animals Division, Animal Diseases Research Institute, Hull, P.Q.*

IN JOHNE'S disease in cattle, skin sensitivity to johnin P.P.D. is usually demonstrable considerably earlier than serological activity, but may disappear at later stages of the disease whereas the latter, once developed, may persist thereafter. In complement-fixation tests, the intensity of the reaction with a polysaccharide fraction of Johne's bacillus increases as the disease progresses. Cattle and guinea pigs immunized with these bacilli in adjuvant developed complement-fixing activity both with a polysaccharide fraction and with a protein fraction prepared from unheated organisms, but not with johnin P.P.D. However, in guinea pigs repeatedly injected with johnin P.P.D. in adjuvant, complement-fixing activity with this material as well as marked skin sensitivity was demonstrable. Sera of blood collected from these guinea pigs 24 and 48 hours after a johnin test showed no increased complement-fixing activity with johnin P.P.D. Neither was it possible to passively transfer skin sensitivity to johnin to normal animals by injection of alpha-globulin fractions of such sera.

### Coxsackie B5 Virus Infections in Children.

D. M. McLEAN and SELMA J. WALKER, *Department of Virology, The Hospital for Sick Children, Toronto.*

BETWEEN July 1 and October 31, 1958 we studied 66 childhood cases of aseptic meningitis, 15 cases of pleurodynia, and 8 cases of pericarditis. Coxsackie B 5 virus was isolated from the faeces of 33 aseptic meningitis patients, 14 pleurodynia cases and 5 pericarditis patients. This virus was also isolated from cerebrospinal fluids from 17 aseptic meningitis cases and 3 who had pleurodynia together with aseptic meningitis. Serological results on all pericarditis and pleurodynia patients studied and on 26 patients with aseptic meningitis were consistent with recent infection by Coxsackie B 5 virus.

### Inhibition Studies on Penicillinase.

M. GOLDNER and R. J. WILSON, *Connaught Medical Research Laboratories Toronto.*

MANY clinically-isolated resistant staphylococci are believed to overcome the antibiotic effect of penicillin through its inactivation by the bacterial penicillinase enzyme. Means by which this bacterial resistance to penicillin may be blocked are the use of a chemical inhibitor of penicillinase, the neutralization of the enzyme with an antipenicillinase serum, and the interference with the mechanism of increased production of the enzyme by the bacteria. In the presence of a substance structurally related to that part of the substrate involved in the formation of the enzyme-substrate complex, it would be possible to inhibit the hydrolysis of penicillin to penicilloic acid by penicillinase and attempts at such experiments under *in vitro* conditions are here reported. Also, comparisons have been made of the inhibitory effect of specific group inhibitors on the action of penicillinase preparations from various bacterial sources on penicillin. Penicillin as a substrate may be incidental for the enzymatic action of penicillinase. Abraham (*The Enzymes, Chemistry and Mechanism of Action*, Vol. 1, p. 1170, 1951) has suggested that the enzyme plays a role in the biochemical processes of certain living cells. Some indications as to another substrate for penicillinase would be helpful in further understanding the nature of the enzyme and should offer valuable information as to possible inhibitors.

### The Latex Agglutination Test with Extracts of Staphylococci.

R. ZNAMIROWSKI, ANNE M. COLLINS, ELISABETH NEELIN and T. E. ROY, *The Hospital for Sick Children, Toronto.*

THE latex agglutination test was adapted to a system using staphylococcal extracts and rabbit antisera prepared by several methods.

The optimal conditions for performing the test, such as the concentration of antigen, pH, time and temperature of incubation were determined.

The results obtained showed a marked degree of cross-reactions between pyogenic staphylococci, non-pyogenic staphylococci and streptococci (group A) and paralleled closely those found by the hemagglutination technique.

The advantages of the latex agglutination test over hemagglutination are discussed.

### The Problem of the Mattress in Cross-infection.

G. DEMPSTER, A. L. SWANSON, M. I. DAVY, *Department of Bacteriology, College of Medicine, University of Saskatchewan, Saskatoon.*

STUDIES have been made of the survival of various species of bacteria on foam rubber mattresses as part of the program investigating possible sources of cross-infections. It was noted that the foam rubber contains a substance inhibitory to *Staphylococcus aureus* and other species. A quantitative study was made of the rate of inactivation of the *Staphylococcus* when adsorbed onto pellets of foam rubber. The effects of washing, fumigation, and of aging of the mattress upon the relative activity of the inhibitory substance were investigated.

The relationship of these findings to the problem of the mattress in cross-infection is discussed.

### Bacteriophage Typing and the Types of *Staphylococcus aureus* in Canada in 1957.

E. T. BYNOE and R. D. COMTOIS, *Laboratory of Hygiene, Department of National Health and Welfare, Ottawa.*

THE distribution, by phage groups, of 11,756 cultures of *Staphylococcus aureus*, isolated in Canada during 1957, is presented. This report is based on the results of tests carried out at the Laboratory of Hygiene and at the public health laboratories of seven of the provinces. Type 80/81/82, the commonest hospital "epidemic" type of the day, was identified in 20.9% of the cultures examined. Approximately 18% of the cultures were untypable.

The phage grouping of some 2,000 of the cultures for which there is available specific information regarding origin, viz: type of lesion, site of isolation, etc., is also presented, as are also the predominant types (patterns) among the groups. These findings are discussed in relation to the observations from other countries.

Decisions reached at the recent meeting in Stockholm of the International Committee on the Bacteriophage Typing of Staphylococci will be briefly discussed.

### Problems Associated with the Use of Antibiotic Discs in the Clinical Test Laboratory.

L. GREENBERG, *Biologics Control Laboratories, Laboratory of Hygiene, Department of National Health and Welfare, Ottawa.*

RECENT studies have shown that, in the past, there has often been little correlation between the labelled claims and the assayed potency of antibiotic discs. Improved methods for their control introduced fairly recently have resulted in a much more uniform product, the majority of which meet their labelled claims. This, unfortunately, has not solved all of the problems associated with antibiotic sensitivity testing in the laboratory. The manufacture of the discs, whether tablet or paper and the quality of paper, will have considerable influence on the results, as will the media employed and the size of inoculum used. Finally, it will be necessary to determine the levels of antibiotic the different discs should contain. The latter may not prove a simple matter since it will involve a careful study of both the laboratory and clinical results and may very well differ with the methods used.



### Melophagus ovinus, a Possible Vector of Q Fever in the Province of Quebec.

V. PAVILANIS, *Institute of Microbiology and Hygiene, School of Hygiene, University of Montreal, Montreal.*

Our previous survey showed us that a large proportion of sheep in the Province of Quebec are infected with *Rickettsia burneti* (V. Pavilanis, L. Duval, A. R. Foley and M. L'Heureux, Can. J. Pub. Health, December 1958). It is known that many different arthropods could be reservoirs as well as vectors of *R. burneti*. Our interest was to find which arthropods in the Province of Quebec could be vectors of Q fever.

The most common parasite found on sheep in the Province of Quebec is *Melophagus ovinus*. Through the courtesy of Dr. L. Choquette, the parasitologist of the Province of Quebec we received 10 samples of *Melophagus ovinus* from different parts of the province. When inoculated in guinea pig 4 samples produced fever and appearance of specific antibodies. From the organ of those animals we could isolate rickettsias in lice which controlled by complement fixation proved to be *R. burneti*.

By studying the excrements of those melophagi we found that most of insects excreted rickettsias seen on smears stained by Machiavello technique. Those rickettsias named by Nöller *R. melophagi* are bigger than *R. burneti* and do not produce fever or Q fever antibodies in inoculated guinea pig.

To prove that *Melophagus ovinus* can act as a vector of Q fever we performed the following experiments. In two separate experiments rabbits were inoculated intravenously with a suspension of *R. burneti* Henzerling strain. One hour after inoculation the melophagi were fed on that rabbit. The melophagi were taken from a sheep which was isolated for a month and did not present any Q fever antibodies nor was *R. burneti* isolated from its blood.

To prove that there were rickettsias in inoculated rabbits, 2 hours after inoculation, the rabbits were bled and 1 cc of whole blood inoculated in 2 guinea pigs. On the 6th day guinea pigs presented typical increase of temperature and one month after inoculation those animals had complement fixing antibodies 1/256 to 2048.

The melophagi fed on rabbit presented great mortality on the third day the melophagi were fed on a sheep.

The excrements of melophagi taken before the infectious meal were inoculated in the guinea pigs as well as excrements 5 days after the infectious meal. No *R. burneti* were found in the excrements of melophagi before the infectious meal. The excrements taken 5 days after the infectious meal produced increase in temperature as well as appearance of Q fever antibodies in inoculated guinea pigs, giving the titer of 1/128-1/512.

This study proves that *Melophagus ovinus* can act as a vector of Q fever in the Province of Quebec.

### Q Fever in South Australia.

P. WARNER, *Bacteriologist, Winnipeg General Hospital, Winnipeg.*

THIS is a description of an epidemiological investigation of the most severe recorded outbreak of Q fever in South Australia by my colleagues Margaret Beech, A. E. Duxbury, B. W. Moore and myself. In South Australia from 1947 to 1956 inclusive there were 60 clinically diagnosed cases of Q fever—49 were serologically proven. In 1957, from May to December, 53 serologically proven cases of Q fever occurred in Adelaide—all but one of these were abattoir workers. The exception was a dairy farmer whose history strongly suggested that the incubation period was considerably longer than that generally accepted. This evidence was supported by data from two other patients. It was considered that the epidemic consisted of a series of single source outbreaks rather than one in which the infectious agent was present continuously. The attack rate was highest for inspectors and the next highest was for beef hall and offal floor workers. The attack rate was not conspicuously high among those in the mutton hall and it was negligible for those handling clean meat, non-meat workers and drovers. It was concluded that the transmission of the agent was by spray in the killing hall from cattle that were both infected and near the end of pregnancy.

Serum was obtained from nearly 500 volunteers from the total of 800 employees of the abattoirs in Adelaide. These results revealed inapparent infections and showed that the main impact of the disease occurred in the killing halls and offal floor. Dust did not appear to play any part in the transmission of infection.

### A Comparative Study of Conventional Serological Methods with Those Employing Treponemal Antigens.

B. ROUSSEAU and J. P. DESBIENS, *Division of Laboratories, Ministry of Health, Montreal.*

THE evolution of serodiagnosis of syphilis, characterized by numerous changes during the past fifty years, has finally presented us with tests based on the use of treponema organisms or extracts of them, as antigens.

This study compares, in a limited number of cases, the results obtained from the more common conventional diagnostic tests (Kolmer and Kahn), with those from some of the newer procedures: TPI, TPCF and RPCF. In the light of the clinical information that we have been able to secure on these cases, the superiority of the methods employing specific antigens appears to be evident. We now may hope, in the near future, that some treponemal antigen test will serve to diminish the number of biological false positives presently encountered and considerably reduce the frequency of divergent results which are often difficult of interpretation.

### Some Bacteriological Problems in the Preservation of Foods by Gamma-irradiation.

I. E. ERDMAN and F. S. THATCHER, *Microbiology Section, Laboratories of the Food and Drug Directorate*; K. F. McQUEEN, *Atomic Energy of Canada Limited, Commercial Products Division, Ottawa.*

IRRADIATION studies of cultures of staphylococci, coliforms, enterococci, *Salmonella pullorum*, *Clostridium botulinum* and *Mycobacterium tuberculosis* were done using a cobalt 60 gamma-irradiation source.

Data will be presented to show that the sensitivity of bacterial cells to gamma-irradiation is substantially influenced by the nature of the cell suspending medium.

"Pasteurization" as applied to irradiation treatment has not the same meaning as it has with heat processed material. Enterococci and staphylococci survived greater irradiation dosages than did coliforms which in turn survived greater dosages than did the culture of *Mycobacterium tuberculosis* (B C G strain) used.

Varying degrees of resistance to gamma-irradiation were developed by 6 selected cultures which were repeatedly submitted to an irradiation dose sufficient to kill about 99% of the culture on initial exposure.

Irradiation at 2.5 million rep. had no measurable effect on botulinum toxin, but with crude staphylococcal toxin, emetic activity, though present following 110,000 rep. was absent after 2.5 million rep. The titer of crude staph. toxin with an initial  $\alpha$ -lysin value of 1:8192 was reduced to 1:1024 and to 1:256 after 110,000 and 2.5 million rep. respectively.

### Pigmentation de *Pseudomonas aeruginosa* en Fonction des Milieux de Culture.

B. MARTINEAU et A. FORGET, *Département de Bactériologie et Institut de Microbiologie et d'Hygiène de l'Université de Montréal.*

Nous avons observé que le pigment soluble caractéristique des *Pseudomonas* s'obtenait facilement sur gélose-sabouraud-maltose même si l'espèce ne sécrétait pas de pigment sur gélose ordinaire. En modifiant la composition de la gélose-sabouraud-maltose nous avons recherché l'action stimulante ou inhibitrice des différents extraits de viande, de peptones et de sucres employés dans les milieux usuels.

### Pulmonary Histoplasmosis. A Case Report.

W. E. H. MASON, *Department of Medicine, Royal Victoria Hospital* and F. BLANK, *Department of Bacteriology and Immunology, McGill University, Montreal.*

*Histoplasma capsulatum* was isolated from the pleural drainage of a 58-year-old farmer who for six years had been ill with cough and shortness of breath. On admission to hospital pulmonary function tests suggested the diagnosis of congenital cystic disease of the lungs. Biopsy of a lymph node showed a reticular hyperplasia and PAS-positive material in the macrophages.

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### Etude d'un Milieu Nouveau pour la Démonstration de l'Activité de l'Uréase chez les Entérobactériaceae.

G. NOGRADY, *Département de Bactériologie de la Faculté de Médecine de l'Université de Montréal.*

Nous avons préparé un milieu tamponné contenant de l'urée, sur lequel *Proteus vulgaris* donne, sans envahissement, des colonies bleues entourées d'un halo de même couleur. Ces caractères permettent de distinguer *Proteus vulgaris* des autres. *Enterobacteriaceae* qui n'attaquent pas l'urée. Ce milieu donne, en outre, la possibilité de différencier certaines *Enterobactéries* pathogènes des saprophytes.

Les travaux rapportés concernent l'étude du milieu avec diverses espèces d'*Enterobactéries* et la détermination de la valeur pratique de celui-ci ensemencé avec des échantillons de matières fécales fraîches.

### Recherches de Virus Cytopathologique dans les Cas de Diarrhée d'Été avec Cas Témoins.

J. JONCAS, *Institut de Microbiologie et d'Hygiène de l'Université de Montréal et Montreal Children's Hospital*

DURANT juillet, août et septembre 1958 des échantillons de selles furent obtenus, grâce à la collaboration du "Montreal Children's Hospital", chez 25 enfants souffrant de diarrhée ainsi que chez 25 enfants témoins du même âge; le contrôle bactériologique fut assuré par le département de Bactériologie du Montreal Children's Hospital. Dans les cas de diarrhée des échantillons de sang furent aussi prélevés à la phase aiguë et à la phase de convalescence.

Les selles furent traitées selon la méthode de Alvarez et Sabin (J.A.M.A. vol. 167, 147, May 10, 1958) et ensemencées sur culture de tissus (reins de singe et Héla).

Tout agent cytopathogénique fut typé contre le 1er et 2ème sérum du malade ainsi que contre les sérums connus: Polio, Coxsackie A 9 et B<sub>1-5</sub>, et ECHO.

Les tests de fixation du complément pour influenza et APC furent aussi faits sur les deux sérums.

Les résultats obtenus à date seront livrés en décembre.

### Review of Isolations of Enteric Viruses During Poliomyelitis Season in Ontario 1956, 1957 and 1958.

M. COOPER, J. LESIAK, D. BELBIN and N. A. LABZOFFSKY, *Virus Diagnostic Unit, Central Laboratory, Ontario Department of Health, Toronto.*

THE term "poliomyelitis season" as used in this report is an arbitrary designation of a period from June 1 to October 31. During three such seasons 1956, 1957 and 1958, 1725 specimens were examined with 575 viral isolations as tabulated below.

	1956		1957		1958	
Total Isolations	250		146		179	
Polio Type I	76		16		20	
Polio Type II	21	42%	2	13%	0	11%
Polio Type III	9		1		0	
Coxsackie A	0		3	11%	2	69%
Coxsackie B	5	2%	13		122	
ECHO	116	46%	91	62%	13	7%
Unidentified	23	9%	20	14%	22	12%

As may be seen from the table the predominating virus during 1956 and 1957 was ECHO 9, and was isolated from cases clinically diagnosed as suspected poliomyelitis, non-paralytic poliomyelitis or later as aseptic meningitis. During those years Coxsackie infections were few. During 1958 Coxsackie B5 became the most frequent infection, isolations being made from cases clinically diagnosed as aseptic meningitis, pleurodynia, pleurodynia with pericarditis or pericarditis of viral origin. Coxsackie B5 was isolated from about 20 cases associated with pericarditis. As far as the authors can learn this is the first time an association of a virus with pericarditis has been established by the isolation of virus and serology. In one instance Coxsackie A9 was isolated from the liver of a fatal case of coronary periarteritis. In some instances virus was isolated from the blood. The 22 viruses tabulated in the last column have not yet been identified but are under study.

### **Poliomyelitis in Manitoba in 1958.**

J. C. WILT, *Department of Bacteriology and Immunology, Faculty of Medicine, University of Manitoba, Winnipeg.*

AN outbreak of poliomyelitis occurred in the province of Manitoba, beginning in July and continuing through August, September and October to the time of writing of this abstract (Oct 18, 1958). It is therefore impossible to present the final figures since new cases are still being seen. An analysis of the outbreak on October 1, showed 102 reported cases of poliomyelitis, 77 of the 102 with paralysis; seven deaths had occurred up to this date. Approximately 70 type 1 Poliovirus isolations have been made to date. The presentation will deal primarily with the results obtained in the laboratory on the examination of faeces and blood specimens submitted during the outbreak.

### **One-Dose Chicken Potency Screening Test for Poliomyelitis Vaccine.**

R. J. HOSLEY, A. V. BOAND, J. O. MacFARLANE and B. E. KIRK, with the technical assistance of R. M. VAN FRANK and M. L. HAVENS, *Eli Lilly and Company, Indianapolis, Indiana, U.S.A.*

STUDIES leading to the development of a potency screening test for poliomyelitis vaccine are presented. The test is based on the measurement of neutralizing antibody in serum from six-week old chickens receiving one dose of a single dilution of vaccine. Basic principles which must be adhered to in the design of such a test are discussed.

The relationship of age of chickens to antibody response was studied using chickens from two to eight weeks of age. Optimum response was observed in six-week old chickens. Varying dilutions of the vaccine were studied in order to select a concentration which would permit an effective measurement of antigen. Dilutions of 1:10 and 1:30 were chosen for trivalent and mono-valent vaccines respectively. Antibody response was found to be specific in studies of cross-reactions to the three antigenic types, and in observations relating to possible modification of response to a given antigenic type as a result of trivalent combination. Statistical criteria for the proposed test for vaccine are discussed with comments on modifications and extensions of the test for semiquantitative studies.

### **Disc-Plate Assay of Poliomyelitis Antibodies.**

LEONE FARRELL, *Connaught Medical Research Laboratories* and D. B. W. REID, *Connaught Medical Research Laboratories and School of Hygiene, University of Toronto*, with the technical assistance of MURIEL J. LESLIE and G. E. VAN BELLE, *Connaught Medical Research Laboratories, Toronto.*

A PROCEDURE has been developed for the titration of poliomyelitis neutralizing antibodies by measuring the size of the zone of inhibition produced by serum applied with cups or paper discs to infected tissue cultures in Petri plates. Discs were investigated primarily because of the small volume of material required. The relationship between the diameter of the zone of inhibition and logarithm of serum dilution was found to be linear over a wide range. The procedure has been used successfully with rabbit, monkey, chick and human sera and whole human blood. Typical data will be presented. The precision of the method will be set out and discussed in relation to the conventional metabolic inhibition titration.



### Poliovirus Antibody Response Following Various Vaccination Schedules and at Different Ages.

D. R. E. MACLEOD, C. W. J. ARMSTRONG,\* G. W. O. MOSS,\*\* F. C. POTTER and R. J. WILSON, *Connaught Medical Research Laboratories, Toronto.*

1. A previous report (Canad. J. Pub. Health, 1957, 48, 96) presented evidence that, in school children, a high rate and degree of response followed initial vaccination with two doses of poliomyelitis vaccine. This report presents further observations on these groups as well as the results of studies of infants under 1 year and adults.

2. Two weeks after the booster dose all children had developed antibodies to all three types of poliovirus.

3. Satisfactory antibody levels were maintained in children eighteen months after the booster dose.

4. Infants under one year did not respond as well as children over six years or adults. The difference, though significant, was not great.

5. Maternal antibody did not appear to affect response, as evidenced by antibody levels ten months later.

6. Three doses given with an interval of one week between the first and second and three weeks between the second and third doses did not give measurably different responses from two doses given one month apart. However, three doses given at intervals of one month gave a greater response. The data for the latter are given in another report. (Clinical Trial of Quadruple Antigen, DPT-Polio Vaccine, R. J. Wilson, D. R. E. MacLeod, G. W. O. Moss, and F. C. Potter, Connaught Medical Research Laboratories).

7. Initial vaccination of one dose only, gave a much poorer response than two doses. However, a second dose given seven or ten months later gave responses similar to the two dose initial vaccination. Thus, varying the interval between first and second doses from one month to ten months made no appreciable difference in the response.

8. The observed responses to varying numbers of doses and intervals are consistent with the secondary response phase beginning shortly before one month.

\*Deceased, February 28, 1958.

\*\*Present address—Department of Health, Toronto.

### Clinical Trial of Quadruple Antigen, DPT-Polio Vaccine.

R. J. WILSON, D. R. E. MACLEOD, G. W. O. MOSS\* and F. C. POTTER, *Connaught Medical Research Laboratories, Toronto.*

A CLINICAL trial using Diphtheria and Tetanus Toxoids combined with Pertussis and Poliomyelitis Vaccines (DPT-Polio Vaccine) was carried out on infants under one year of age. Three doses of 1 cc. were administered at intervals of 4 weeks and blood samples were obtained before and two weeks following the three doses. Diphtheria and tetanus antitoxins and antibodies to the three types of polio-viruses were titrated. The response to the poliomyelitis vaccine and to the two toxoids was highly satisfactory.

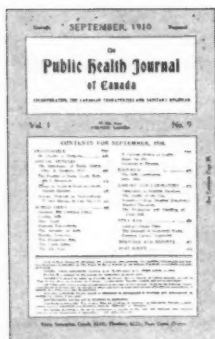
\*Present address—Department of Health, Toronto.

# Canadian Journal of Public Health

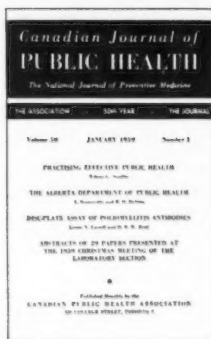
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## *The Fiftieth Year of the Association and the Journal*



**FIFTY YEARS!** The fifty years which recorded the development in Canada of the modern public health movement. The fiftieth year of the Canadian Public Health Association and its Journal should be appropriately marked.

This year, the annual meeting will be held in Montreal under the presidency of Dr. Jules Gilbert. The meeting will be the focal point of the year's celebrations. It was in Montreal that the first annual meeting was held in September 1911 and it is indeed appropriate that the jubilee meeting should take place in the same city.

For the Journal, it will be a very special year. Editorially, the story will be told of the efforts, extending back eighty-five years, to provide a national public health association and a public health journal. To picture the public health organization of fifty years ago, its health problems and to remind us of the public health leaders of that day, the Journal will publish extracts from papers which appeared in Volume I in 1910.

As a special commemorative publication, it is proposed to publish in collected form the series of articles presenting the development and present organization of public health services, federal and provincial, in Canada. Five of the articles have already been published and the remainder will appear this year. This is, indeed, an ambitious undertaking, but the hearty co-operation of the deputy ministers of health has made it possible. The publication of this outline of health services in Canada and their development is in response to the interest in a similar publication which was issued by the Association in 1940.

Fifty years is a long period in the life of any association and, particularly, of a journal. The Canadian Journal of Public Health is really much older than fifty years for its forerunner was first published in 1874. It is among the very earliest journals in the world in public health, for public health was in its infancy in 1874. In Canada, the British North America Act of 1867 referred to health in only two sub-sections, assigning jurisdiction in quarantine, vital statistics and marine hospitals to the federal parliament and jurisdiction of hospitals, mental and charitable institutions to the provinces. It is, therefore, surprising that a practising physician resident in Ottawa and later, Toronto, became so convinced that in preventive medicine lay the means for the advancement of the health of every citizen that he undertook to publish at his own expense a public health journal. Edward Playter was his name. For twenty years he struggled to maintain the Journal, recognizing that only through informing physicians and the public alike, could the provision of better health for all become a reality. In a subsequent editorial, the vicissitudes of Dr. Playter as well as his accomplishments will be reviewed. It is a story that challenges us today and causes us to realize the littleness of our sacrifices for the work in which we are engaged. Thirteen volumes of his journals were published, the last issue bearing the title "Canada Health Journal" appeared in 1892.

Culminating his years of effort, Dr. Playter was instrumental in establishing a national public health association to which physicians, dentists and citizens alike were invited as members. It was named the Dominion Health Institute. It was the predecessor of our Association, having as its purpose the promotion of health and the preservation of the lives of the people of Canada. But support was not forthcoming. With its failure, Dr. Playter relinquished his efforts and gave himself for the remaining years of his life to his medical practice.

Two decades later the modern public health movement in Canada was born. Appreciating the growing nation-wide interest in public health, two practising physicians in Toronto, Dr. Duncan Anderson and Dr. L. M. Coulter, formed a private publishing company and commenced the publication of a journal devoted to health under the title "The Canadian Journal of Public Health". Shortly after the title was changed to "The Canadian Therapist and Sanitary Engineer". The time was ripe to try again to establish the national public health association which Dr. Playter had struggled so hard to create, having as its purpose the informing of the public of the advances in public health. In 1910, during a conference of federal and provincial health officers, called by the Dominion Commission on Conservation in Ottawa, a meeting was held on the invitation of Dr. George D. Porter, general secretary of the Canadian Anti-Tuberculosis Association, to consider establishing a Canadian public health association. Approval being given, application for incorporation in Ontario was made. Dr. Anderson and Dr. Coulter were members of the group of five original incorporators. Incorporation was granted to the Association in 1910. The first public meeting was held in the Parliament Buildings, Ottawa in October 1910 and an organizing committee of eighteen members representing all the provinces was appointed with Dr. P. H. Bryce as chairman and Dr. Charles A. Hodgetts as secretary. It is of interest that at the inaugural

meeting in 1910 the Journal was made the official publication, the publishers adopting the name "The Public Health Journal of Canada".

The first annual meeting of the Association was held in Montreal in 1911 and was a notable occasion. Generous financial support was received from Lord Strathcona. The Governor-General, H.R.H. the Duke of Connaught, and the Right Honourable R. L. Borden were patrons and the premiers of all the provinces were present. At this meeting, held under the presidency of Dr. T. A. Starkey of McGill University, the decision was made to apply for a Dominion charter. On April 12, 1912 the Association was incorporated by Act of Parliament. Thus, the Association was established in 1910 by provincial incorporation and received a Dominion charter in 1912. In 1912 and 1913 the annual meetings were held in Toronto and Regina, respectively, and both were outstanding successes. World War I ended the prosperity of the Association and by 1916 the company publishing the Journal was no longer able to continue. Dr. George D. Porter, treasurer of the Canadian Public Health Association, assisted the company financially during its efforts to continue the publication of the Journal. His services to the Association as treasurer and later as president for four years will long be remembered. In this crisis the Journal was salvaged by a group of ten members of the Association who personally assumed the Journal's indebtedness, taking over the publishing company's responsibilities. Dr. Gordon Bates was appointed editor. To him, the Association is deeply indebted for his editorial services and to the small group of the Association's members for maintaining the Journal.

In 1928, the Association stood at the crossroads. Should the Association and its journal continue? The hope that the Journal would become financially solvent had become dim as deficits had been recorded almost every year. That year, at the seventeenth annual meeting of the Association in Winnipeg, the decision was made to continue the Association and to concentrate on its services to all public health personnel. By this decision the Association continued to serve as a national voluntary health agency, having as its objective the achievement of the best in public health services, local, provincial and federal. It was essential that the Journal be continued and that it be published by the Association. The purchase of the Journal presented a serious financial problem but funds were made available and the Journal was acquired. The present editor was named to this honorary post. Dr. J. T. Phair, now consultant to the Department of Health of Ontario, served for twenty years as the honorary secretary of the Association and later as president and through his faith in the Association the important decision to continue was made and implemented. In the following year the name of the journal became the "Canadian Public Health Journal" indicating the Association's ownership and responsibility. Thirty volumes of 12 issues each have now been published by the Association—only one of the monthly issues has been missed and this was occasioned by a printers' strike.

To mark the fiftieth year, your executive calls for the active participation in the Association of all who are engaged in public health in Canada.

**Do your part!**

## *The Organizing Committee of the Canadian Public Health Association, 1910*

PETER HENDERSON BRYCE, M.A., M.D. (1853-1932)



Dr. Bryce was chairman of the organizing committee appointed at the inaugural meeting of the Canadian Public Health Association in the Parliament Buildings, Ottawa, on October 10, 1910. The committee consisted of eighteen members with representatives of all provinces. It was fitting that Dr. Bryce should be chosen as chairman as he was recognized as one of the outstanding leaders in public health, being chief medical officer in the Department of Immigration, Ottawa.

Dr. Bryce was born at Mount Pleasant, Brant County, Ontario in 1853. He graduated from the University of Toronto with the degree of B.A. in 1876 and subsequently received his M.A. in 1877, M.B. in

1880 and M.D. in 1886.

In 1882 a public health act in Ontario was passed establishing the Provincial Board of Health and Dr. Bryce was appointed the first secretary of the Board (part-time).

Of Dr. Bryce it can be truly said that he was a pioneer in public health. He prepared the comprehensive Public Health Act of 1884 which became the model for public health acts in other provinces. The clarity of vision which characterized Dr. Bryce is appreciated when this Act is studied. It provided for the appointment of a board of seven members and a full-time secretary. All municipalities in Ontario were urged to establish local boards of health.

Dr. Bryce was a pioneer in health education in Canada and stressed the necessity of public education if tuberculosis was to be controlled. He rented two stores in downtown Toronto and set up, in 1883, the first public health education exhibit. In 1884, smallpox ravaged Montreal and Dr. Bryce was successful in preventing the spread of the disease into Ontario by blocking all roads and stopping all trains and compelling everyone to be vaccinated.

Upon his retirement from the position of chief medical officer of health of Ontario in 1904, he became chief medical officer of health of the Department of the Interior.

Dr. Bryce was active in the literary field and was a life-long member of the Canadian Historical Society. In 1900, he was president of the American Public Health Association—the first Canadian to hold that office. He was elected to honorary life membership in the Canadian Public Health Association in 1924. He was a man of delightful personality, cultured and well-informed. The early reports of the Provincial Board of Health of Ontario will always constitute one of the finest memorials of his work in public health.

To him the Canadian Public Health Association is indebted for his leadership in establishing the Association.

## Industrial Health

### Industrial Nursing and Public Health<sup>1</sup>

GRETA SCOTT,<sup>2</sup> R.N.

Industrial nursing has been defined as "the application of the principles of nursing, particularly public health nursing, in business and industry to meet the needs of the worker".

The Mersey Paper Company has had a registered nurse in attendance in the mill since its beginning in 1929. We conduct preplacement, routine periodic, and special physical examinations, visiting nurse services, as well as health and safety education programs. In the preplacement examination, the history, temperature, pulse, exercise tolerance, haemoglobin, urinalysis, sight-screening and chest X-ray are done by the nurse a day or week before the doctor performs the actual physical examination.

We work closely with the local public health authorities and last year we sent 793 chest films to the divisional medical health officer for interpretation. His reports are generally sent to us, recorded on the employee's card and the original returned to the district office of the department of health. If he wishes, the divisional medical health officer may then send films to Roseway Sanatorium or the Nova Scotia Sanatorium for consultative opinion. All routine follow-ups are done by the industrial nurses. As long as a tuberculosis suspect is employed at Mersey the public health nurse need not be concerned with getting him to the clinic. When and if he should leave our employ we notify the Department of Public Health and tell where he has gone, if possible. We work closely with the Department of Public Health in tracing tuberculosis sufferers who wish to evade treatment in the sanatorium. Through our close relationship with the company workers we have sometimes

been able to provide clues as to their probable future plans.

We also work with the Public Health Department in venereal disease control but at present we have very few problems in this field. Out of 700 men we have 4 cases and they are of congenital origin. In the past when there were more cases we often helped the public health staff to locate persons who failed to report for their compulsory treatment.

Home visiting is another function of our medical center. We do not carry out home or bedside nursing and frequently the Victorian Order of Nurses or public health nurses are visiting in the same homes. Visits are made to employees in hospitals and we co-operate with the hospital staff to get our men back to work in the shortest possible time.

The field of mental health is receiving more and more attention. Last year we had five employees who received psychiatric treatment and returned to their jobs. Industrial nurses have great opportunities to aid in the prevention of mental illness.

We have no definite program of rehabilitation in our company but we do try to rehabilitate anyone whom the doctor will allow to return to work. We have five patients working at their regular jobs who have had coronary attacks—one is a labourer and one is a pipe fitter. There are six former tuberculosis patients and we also have men attending the tumour clinic, some for diagnosis only and some for treatment.

Our industry, employing nearly 1,000 men, operates in a small town surrounded by villages and the activities of the hospital, public health authorities, Victorian Order of Nurses and industrial nurses are, of necessity, closely interwoven. In closing, I would remind all public health doctors and nurses that industrial nurses in every area are eager to be of assistance to you in the promotion of optimum health for all citizens.

1. Presented at the seventh annual meeting, Atlantic Branch, C.P.H.A., held in Kentville, N.S. Nov. 6-8, 1957.
2. Industrial Nurse-in-Charge, Mersey Paper Co. Ltd., Liverpool, N.S.



## NEWS NOTES

### Federal

On October 25 an explosion in a building on Slater Street, Ottawa, wrecked the interior of the Jackson Building which accommodated on its three top floors many of the Department of National Health and Welfare's offices. Temporary quarters have been obtained in the Copeland Building, No. 1 Temporary Building and in the departmental laboratories in Tunney's Pasture. Normal operations of the Jackson Building divisions were interrupted for almost two weeks while new space was arranged and furniture and records removed from the shattered offices. Most personnel have been allotted their previous telephone numbers and the mailing address remains Department of National Health and Welfare, Ottawa.

A joint United States-Canadian meeting was held in Ottawa late in October to discuss the relative fall-out monitoring programs. Representatives from the United States Atomic Energy Commission, the United States Public Health Service, the United States Department of Agriculture, the Lamont Geological Laboratory and the Los Alamos Scientific Laboratory met with representatives of Atomic Energy of Canada, Ltd., and the radiation protection division, Department of National Health and Welfare. The subjects discussed included air, rainfall, soil, milk and bone sampling methods.

The 14th annual meeting of the technical advisory committee on public health laboratory services was held at the Laboratory of Hygiene, Ottawa, on December 11-12. The advisory committee on public health engineering met in Ottawa in mid-November.

A meeting was held in Ottawa in mid-November to discuss radiation and other health problems among uranium miners. Attending were representatives of the occupational health and radiation protection divisions of the Department of National Health and Welfare, the biology division of Atomic Energy of Canada, Ltd., and the occupational health branch of the Saskatchewan Department of Public Health.

James Gibbard, director, Laboratory of Hygiene, Department of National Health and Welfare, has been elected chairman of the State and Provincial Public Health Laboratory Directors Conference. This is the first time this office has been held by a Canadian.

T. J. Giles, administrative officer in the research development and international

health administration, Department of National Health and Welfare, resigned in mid-November to become executive secretary of the Royal College of Physicians and Surgeons of Canada, Ottawa.

Dr. Hugh R. McLaren, dental health division, Department of National Health and Welfare, has been elected a member of the governing council of the American Public Health Association for a three-year term.

J. A. Remi Verrette, B.A., B.Sc., and Walter Yarosh, B.Sc., have joined the staff of the Laboratory of Hygiene, Department of National Health and Welfare, in the bacteriological laboratories and the virus laboratories respectively.

Charles B. McBratney, a 1948 graduate of the University of Manitoba, has joined the Ottawa staff of the public health engineering division, Department of National Health and Welfare, as a chemist.

### Newfoundland

The Honourable Doctor J. M. McGrath, Minister of Health, recently visited London and other centers for the purpose of recruitment of medical personnel. He succeeded in obtaining twelve doctors, most of whom will be taking up posts in cottage hospitals or country practices in the Provincial Medical Service.

Doctor Cairbre McCann has returned to Newfoundland to take up duties as Director of Physical Medicine and Rehabilitation with the Provincial Department of Health. He took three years' postgraduate study in this Specialty in New York and other centers.

The Federal-Provincial Hospital Insurance Plan has been in operation in Newfoundland since July 1, 1958. Services covered include the usual hospital charges at ward rates and a wide range of out-patient diagnostic services.

### Nova Scotia

Mrs. Lois Macneill, P.H.N. joined the provincial public health nursing staff at Wolfville in November.

Mrs. Lorraine Hull, P.H.N., Glace Bay and Miss Anna MacKay, Dartmouth, have resigned from the staff.

### New Brunswick

Mr. G. W. Crandlemire has been promoted to the position of Director of Rehabilitation with his section being raised to divisional status. Mr. Crandlemire was appointed to the position of Provincial Co-

ordinator of Rehabilitation in 1954. The three main areas of rehabilitation services provided by the division are vocational and medical rehabilitation and job placement.

Dr. Maurice J. Babineau, assistant director of maternal and child health, has resigned to take up private practice in Cornwall, Ontario.

Miss Eleanor MacNair, Jacquet River, N.B. and Mrs. Joan Marr, MacDonald College, Que. have joined the staff of the Nutrition Services.

The revised program of training in the Provincial Laboratories which began January 1, 1959 includes a course of study for high school graduates wishing to train as laboratory technicians. This twelve-month course in common clinical laboratory procedures is being conducted at the Provincial Laboratory in Saint John and at the Regional Laboratories in Moncton and Fredericton. Bursaries are available during the training period.

#### Quebec

Dr. Albini Paquette has resigned as Quebec Minister of Health and as member of the Legislative Assembly for Labelle riding. He has been appointed to the Quebec Legislative Council. A member of the provincial lower house for 23 years, Dr. Paquette became Minister of Health when the Department was created in 1936.

Replacing Dr. Paquette as head of the Department is Dr. Arthur Leclerc, a Murray Bay practising surgeon. Dr. Leclerc was already Minister without portfolio in the Provincial Cabinet at the time of his appointment.

#### Ontario

Dr. Gordon Bates, General Director of the Health League of Canada was presented with the Pasteur Institute Medal by French Consul General, Jean Beauroy at a meeting of the France-Canada Association recently in recognition of Dr. Bates' successful efforts in fighting diphtheria in Canada. He is the second Canadian physician to be awarded this Medal, the first being Dr. Charles H. Best, the co-discoverer of insulin.

Twenty-three graduates of the Ontario Department of Health's Technician Training Center at the Central Laboratory, Toronto, were presented with certificates by Hon. Mackinnon Phillips at a recent ceremony. Dr. L. E. Elkerton, Director of the Division of Laboratories was chairman of the program and Dr. W. G. Brown, Deputy Minister, introduced the Minister of Health who addressed the graduating class, visitors and staff members.

Nearly 5,000 people attended the recent official opening of the new 560-bed Chest Diseases Unit of the Ontario Hospital, Woodstock, Health Minister Mackinnon Phillips presided and chairman of the program was Dr. J. J. Weber, superintendent of the Hospital. On the platform also were four former superintendents: Dr. J. J. Williams, 1905-1927; Dr. T. D. Cumberland, 1927-1930; Dr. C. S. Tennant, 1930-1934 and Dr. D. O. Lynch, 1934-1945. The new unit will provide greatly improved facilities for the care and treatment of male and female tubercular patients from all other Ontario Hospitals as well as relieve the congestion at the Woodstock hospital.

#### Manitoba

The second course in basic camp sanitation was held at Flin Flon during November, sponsored by the Manitoba Department of Health and Public Welfare, in co-operation with the Hudson Bay Mining and Smelting. The purpose of the course is to foster a better understanding of the principles behind camp sanitation, in order to achieve a more healthy environment for the men. Topics discussed included: general organization and camp layout; water supply; waste disposal and insect control; living quarters; food-storage and handling; dish-washing and housekeeping; equipment and safety.

Staff members of the Health Department were shocked and saddened by the death on November 14, of Dr. C. C. Wright, former medical director of the Dauphin Health Unit. A man active in the community, and highly regarded by all who knew him, Dr. Wright leaves a void on the staff of the Department.

#### Saskatchewan

Miss Gerda Andreason, nutritionist, has joined the staff of the Swift Current Health Region.

Dr. Frank I. Jackson has arrived from South Africa and has taken up his duties as assistant regional medical health officer in the Regina Rural Health Region.

The regional medical health officers, teachers, psychologists, regional nursing supervisors and nursing consultants met in Regina recently. Participating in the conference were Miss A. Pash, Supervisor of Community Services, Council for Crippled Children and Adults, Dr. Alexander Robertson, professor of Preventive and Social Medicine, University of Saskatchewan, and Mr. Lyle Bergstrom, Chief Superintendent of schools. A tour of the Regina Physical Restoration Center, arranged by Dr. V. L.

Matthews, provided an opportunity for the participants to see the improvement in the departments of special education, occupational therapy, speech therapy and physiotherapy.

The Occupational Health Branch recently held a conference at the University of Saskatchewan for occupational health nurses in private industry.

Dr. Murray S. Acker has returned to the Department of Public Health after completing a two-year project for WHO in the Western Pacific Region. Following his return to the Department, Dr. Acker will direct a new branch concerned with planning and co-ordination.

The Second Western Canada Farm Safety Conference will be held on January 21, 22, and 23 at Valley Center, Fort Qu'Appelle, Sask., with delegates anticipated from the four most western provinces. The first conference was held in Edmonton early in 1958.

Prince Albert will soon join seven other communities in Saskatchewan currently adjusting the fluoride content of their water supply to the recommended optimum level. A slim 262-vote margin (3,214 in favor, 2,952 opposed) passed the fluoridation referendum in Prince Albert. Regina voters turned down the fluoridation question with a vote of 12,566 against and 11,941 in favor. The vote in favor of fluoridation increased by 4,398 while the opposition vote increased by 1,434.

#### Public Health Nursing

Appointments: Mrs. R. B. Dundas to Weyburn, Miss A. McAllister to Prince Albert, Mrs. A. C. Lang to Tisdale, Miss E. Nickel to Swift Current, Mrs. C. L. Major to Stony Rapids.

Resignation: Miss J. Habens, Sandy Bay.

#### Alberta

A national health grant of about \$2,300 has been approved to assist in the financing of two seminars—one on pedodontics and one on orthodontics—to be given in six centers in Alberta. The seminars, developed in co-operation with the Alberta Dental Association, are designed to improve dental services for children.

#### British Columbia

A national health grant of more than \$9,500 has been allotted toward the establishment and maintenance of a model child health service at the University of British Columbia, Vancouver. The project is a collaborative venture of the university departments of paediatrics and preventive medicine and will provide services to the children of university undergraduates. In addition to the basic health services, the center will undertake research on growth and development, study methods of better integration of public health services with those of private practitioners and serve as a teaching center for nurses, medical students and social workers.

The passing of the "Dental Technician's Act" at the 1958 session of the Legislature provided for the establishment of a board of examiners, and in October an order-in-council was passed listing the members: Dr. G. Shrum of the University of British Columbia as chairman; Dr. H. Cline, dentist; Mr. R. R. Keith, lawyer; Mr. J. Smith, president of the Dental Technician's Society and Mr. W. Elder, president of the Dental Laboratory Association, as members. The scarcity of formal full-time courses for dental technicians in either Canada or the United States has posed some problems, and a government committee is presently studying recommendations for technician training that will be acceptable to all three groups concerned.

The program of providing quarters for community health centers, begun in 1951 with the provision of federal and provincial grants, has made encouraging strides during 1958. By the end of the year, twelve new centers had been constructed, and the majority had been officially opened. In keeping with the Province's hundredth anniversary, four of these projects—Vernon, Greenwood, White Rock and McBride—were designated as "Centennial" health centers.

Dr. E. W. R. Best, the director of the Central Vancouver Island Health Unit is going to Ottawa as Chief of the Epidemiology Division, Department of National Health and Welfare; the assistant director, Dr. P. B. Brown, is leaving to take up private practice in New Westminster.

## Books and Reports

**COLLECTED PAPERS OF THE MAYO CLINIC AND THE MAYO FOUNDATION, 1957, Volume 49.** Published by W. B. Saunders Company, Philadelphia and London, 1958. 827 pp.

The medical profession is deeply indebted to the Mayo Clinic and the Mayo Foundation for this widely known series of volumes published during the past 48 years. Volume 49 presents 30 papers in full, 86 by abridgement, 22 by abstract and 608 by title only, presented during the year 1956-57. Material representative of the specialties and of the basic sciences is included. The publication of this annual volume is a valuable extramural work of the Mayo Clinic and Foundation and brings highly valuable papers to the attention of the profession.

**COMMUNITY INVOLVEMENT.** Christopher Sower, John Holland, Kenneth Tiedke, Walter Freeman, Department of Sociology and Anthropology, Michigan State University. Published by the Free Press, Glencoe, Illinois, 1957. 323 pp., \$5.00 (U.S.).

This is a study of the processes by which a few professional persons in a mid-western county in the United States organized a community action in which 700 volunteers achieved the goal of conducting a house to house health survey of 10,000 families. It originated in the desire of the director of the county health department and the hospital superintendent to strengthen the county health council of which the latter was president. The council was in a seriously weakened position because of a lack of citizen interest and support.

The work extended over two and one-half years. Although the survey did not result in the continuation of the health

council, friendships and acquaintances remained which appear capable of accomplishing many of the goals of the formal health council. Within a sociological frame of reference, the findings point to the possibility that informal social systems may be more effective in meeting selected goals than formal structures. It describes and analyses the ways in which a social action program may be initiated and carried out in a community. The book will be read with great profit by all who are concerned with trying to get things done in communities.

**VARIED OPERATIONS.** Herbert A. Bruce, M.D., F.A.C.S., L.R.C.P., F.R.C.S. (Eng.). An autobiography. Published by Longmans, Green & Co., Toronto, 1958. 366 pp. \$6.00.

"Varied Operations" is a most appropriate title for the fascinating story of one of Canada's most outstanding citizens. Dr. Herbert Bruce has had a brilliant medical, military and public career. The autobiography is a vivid summary of ninety years of Dr. Bruce's happy, useful and highly successful life. Dr. Bruce has been a great supporter of public health and public health workers in Canada will be inspired by the intimate story of his life.

**INDUSTRY AND TROPICAL HEALTH**  
III. *Proceedings of the Third Conference of the Industrial Council for Tropical Health.* Published by the Harvard School of Public Health for the Industrial Council for Tropical Health, 1957. 261 pp.

The report presents the papers given at eight sessions in a form of interest to industrial management and to industrial physicians and general practitioners.

